

*The Ritual
of Temperance,
and State Hygiene*

H. Cooper Pattin, D.M.

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THE
**Ritual of Temperance, and
State Hygiene :**

CONTRIBUTIONS TOWARDS A RATIONALE IN
NATIONAL HEALTHINESS;

BY

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University of Cambridge;*

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very ancient City of Norwich.*

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TO

MY OLDEST FRIEND,

JOHN BEATTIE CROZIER, M.B., LL.D.

AUTHOR OF

"THE HISTORY OF INTELLECTUAL DEVELOPMENT,"

ETC.

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PREFACE.

THE fact that the MSS. included in this book have been written at different times constitutes an explanation of, and an apology for, occasional overlappings. An author who follows my calling is virtually compelled to write desultorily : the duties of his office having of necessity the first imperative claim upon his time and resources. Several of the papers have appeared in *Journal or Review*, and I am indebted to the Editors for sanction to re-issue.

I wished to append to the section entitled "The Ritual of Temperance" a paper on "Regimen in Diet," but have had to relinquish the project, so far as the present edition is concerned. Later on, I hope to furnish forth a little diffident guidance : for upon the practice of a sage regimen in diet, salubrity of life undoubtedly is dependent ; and about dieting there is, just now, an appalling lot of common nonsense written, talked, and practised.

I shall feel "disjected" if critics launch against the section on "State Hygiene" the staled accusation of tending toward State Socialism. "State

Socialism," as I apprehend it, signifies a definitive and rigorous social dragooning of individual freedom and energy; and that implies such a deadening of the stimulus to individual effort as inevitably will lead to social stagnation, discipline out initiative, and reduce life to a stereotyped boredom for all progressive spirits. So far as my intentions are concerned, the principles I advocate lead to a *State Standardization of our National Life*—something very different from State Socialism, to me, at anyrate. By "State standardization of the national life" I mean a rationalized application of the principles we now apply to our socio-hygienic problems irrationally and at haphazard; *e.g.*, our existing Poor Law administration is a haphazard application of the principle of standardizing our national life. It does, in effect, standardize a minimum subsistence, and standardizes it badly because it does so irrationally. Or, for purposes of illustration, consider the position we have taken up in dealing with elementary education. We say, implicitly, that it is to the national interest, and vital to our racial welfare, that every child shall receive a certain minimum amount of elementary education, which minimum we determine by statutory authority, and call upon local education authorities to provide; and if need arise, we not only enforce the provision of this minimum, but we also compel the attendance of the child. Very properly we leave the attainment of any desired or conceivable maximum

to private effort. In short, so far as elementary education is concerned, we standardize our national life. That we have done so, in this matter, haphazardly and irrationally, is no argument against standardizing our national life in other directions carefully and rationally. The essence of the standardization being the statutory determination and provision of a minimum standard, below which our national life shall not be permitted to fall, but which leaves the attainment of any desired maximum to that most bracing of racial tonics—personal effort.

The paper on "The Control and Management of Milk Supplies," and the appendix on "Milk and the Feeding of Infants" (which reproduces the sort of directions every Medical Officer of Health distributes in his district) are included, because the attainment of a rationale in national healthiness is impracticable if we neglect the feeding of our infants. We have need also to give attention to the feeding of mothers alike in the pre and post-natal periods. I allude to these papers here for the purpose of affirming (given purity and cleanliness at the source of supply) that the most effective solution of our troubles over the distribution and the home storage of milk will be found in a statutory requirement that *milk for domestic use shall be sold only in bottles, or other sealable vessels*; such bottles, or vessels, to bear labels giving the date, and if not the actual source, at any rate the depôt from which the milk has been supplied. The appendix on

"The Influence of Smoking upon the Growing" will not be overlooked by the judicious reader.

I have to thank my friend Edward Peake for reading over the MS. of the "The Ritual of Temperance," and for tempering a generous appreciation with shrewd, lay criticism.

In conclusion, I desire emphatically to state my belief that our best hope of attaining to a rationale in national healthiness lies in adding a peremptory requisition for rationalized teaching in personal, communal, and State hygiene to our statutory minimum in elementary education.

H. COOPER PATTIN.

*Summum Solum,
Norwich,
Valentine's Day, 1905.*



The Ritual of Temperance.

(a) ALCOHOLIC STIMULANTS.

IRREFLECTIVE intemperance is a characteristic of the race. The seriousness of what is spoken of, so glibly, as "The Temperance Problem," lies in the circumstance that the protean intemperance which has to be attacked is so largely irreflective. A solution of only that section of the temperance problem which deals specifically with intemperance in drinking, involves a great deal more than a lessening of the drink habit. The drink habit is one of the symptoms of the underlying disease. It is the ethico-mental attitude in so far as this is affected by remediable conditions ;

it is this that we have, first of all, to influence, and, if possible, to alter.

To free our minds from a cause of confusion, it is of importance that I now define what I mean by "intemperance." It will not do, for instance, to classify indulgence in the unnecessary as constituting the intemperate; or, if you do so, then tea drinking, tobacco smoking, "hot baths, coal fires, and hair brushing by machinery," and many other adjuncts to the agreeableness of living, will have to be so classified, as well as the practice of consuming alcoholic stimulants: we need some wider, more stable, and far-reaching principle of guidance. I suggest that *the subordination of the interests of the race, to the gratification of the individual, constitutes the true intemperance*. This test can be applied to every asserted type of intemperance, and will prove a reliable standard with which to determine our judgment. The knavery of intemperance lies in the forgetting that the body politic represents a partnership not only between those who are living, but also between those who have lived and those who have yet to live as well. The latter have special claims to consideration. They, hereafter, will constitute the race. It depends largely upon those who are living now whether those who have yet to live can be healthy, temperate beings. To be intemperate here and now means disloyalty to a trusteeship—a robbing of those who have yet to live of their proper meed of

haleness. Intemperance, in short, is a robbery of the race—a crime against one's kind.

This aspect of the temperance problem impels us to render an emphatic affirmative in response to the query, "Am I my brother's keeper?" Unhesitatingly I say yes, you are, and a trustee of the health of his possible descendants, and of the interests of the race into the bargain! Also that you cannot shirk your responsibility: and that to practice the ritual of temperance is for you a categorically imperative duty.

So much said upon the ethical aspect of intemperance, bearing in mind our definition of that manifold sin, viz., the subordination of the interests of the race to the gratification of the individual, I proceed to treat of some of the manifestations of its "deviltry."

First, I will say something about intemperance in the drinking of alcoholic stimulants. Later on I shall have something to say about intemperance in the drinking of caffeinic stimulants (tea, coffee, and cocoa), and also of waters (aërated and other). What, for convenience, we may call "the drink habit" is the most common and obvious type of intemperance. In that which follows I restrict the association of the term "drink habit" to the improper consumption of alcoholic stimulants. So obvious are the effects of this type of intemperance, that many good people imagine that the temperance problem would be solved if everybody became, and

remained, an abstainer from alcoholic beverages. So ominously indeed does this drink habit cloud our social horizon, that it is not infrequently declared to be the national disease. The drink habit is a disgrace to its victim and a danger to the race, but the national disease is undoubtedly dyspepsia. Not even alcoholism can dispute its claim to that bad eminence. The two often are associated intimately. Dyspepsia is, in fact, one of the most common causes of the people lapsing into the drink habit. The gnawing pain of dyspepsia, and the feeling of depression it induces, verging, as this does at times, upon melancholia, are very common occasions of people commencing to take alcohol apart from meals—of commencing, in fact, the drink habit. For alcohol does give temporary relief, at any rate, to certain types of dyspeptic pain, and dispels, for a time, the feeling of depression; albeit, a continuance of the practice of taking alcohol sets up, most commonly, another type of dyspepsia—the alcoholic—which is added to its predecessors, and so the vicious circle is widened. All the same, no doctor who has ever felt the pangs of dyspepsia, experienced the mental depression it gives rise to, and the general sense of physical ill-being, which we can but imperfectly express with the word discomfort, which is its invariable accompaniment; who knows how it paralyses mental effort and makes life itself a burden; no doctor who has experienced these effects can be surprised that lay

victims of dyspepsia should fly to alcohol, or to any other agent which will afford them even temporary relief, though they fly, and for the most part unwittingly, from the ills they have to others that they know not of. Whilst I was engaged in dispensary and general practice, I attended, professionally, over 5,000 persons, and I cannot recall the case of a man over thirty-five years of age, or of a woman over thirty, who was not in some degree dyspeptic. I feel pretty confident that if the national disease—dyspepsia—could be cured, the drink habit would be found to be quite amenable to treatment. Alcoholism, in some few people, is a real disease, and these I should lock up as unhesitatingly as one does other lunatics; but in by far the greater number of cases of alcoholism, the drink habit is a symptom of disease.

To look only, or principally, at the effects of intemperate drinking, and not for the causes of it, is to take a very superficial view of the temperance problem, even when restricted to intemperance in the drinking of alcoholic stimulants. Its real proportions not being apprehended, one can foresee how little likely it is that the evil will be remedied by piece-meal legislation. The drink habit needs more scientific handling. Though I attribute the primal place to dyspepsia, in its protean forms, in setting up this pernicious habit, I am not unmindful of other influences—inherited predisposition for instance, nervous instability, worry, needless induce-

ments to drink alcohol—what is miscalled sociality, etc. Albeit, they are all, so to speak, swallowed up and lost in the national ailment. The commoner causes of dyspepsia—apart altogether from the varieties due to alcoholism—are bad teeth, bad food, bad cooking, worry, hurried feeding, over eating, intemperate tea drinking, depressing surroundings, unhealthy dwellings, intemperate consumption of sugar and of “sweets” generally, idleness, and intemperate smoking. I shall have something to say of these factors in the temperance problem later.

I want now to revert to that form of intemperance which is due directly to the improper consumption of alcohol. Too many advocates of temperance argue the policy of consuming alcohol from the standpoint of the healthy, and, for the healthy, I agree that alcoholic stimulants are unnecessary. What makes the inferences the total abstinence advocate draws from this dialectic so fallacious as guides to average humanity, is the circumstance that quite two-fifths of the grown population are not healthy really. That is, two out of five of the grown people would not be passed by a board of medical experts as being thoroughly sound pieces of human mechanism. The ignoring, or the ignorance, of this damning factor in the temperance problem invalidates the ritual prescribed by teetotal orators. This is where these advocates, not of temperance, but of total abstinence, beat the air. The premisses from which they set out being

vitiating, the conclusions they arrive at necessarily are inapplicable. In dealing with a very large proportion of our people, and if we deem dyspepsia in any shape to constitute unhealthiness—a majority of them—the prudence and the propriety of consuming alcoholic stimulants become matters of therapeutics, and of dieting, which should be directed medically. Because alcohol is not needed by the healthy, it by no means follows that it may not be of benefit to those who are not healthy. To some of these latter it may indeed be a necessity, considered as a dietetic remedy. The determination of this need—it were wise for the amateurs in medicine to leave to the doctors in that faculty.

By the way, I may as well say at once that I use the words “total abstainer” and “teetotaler” in the customary sense, and with their conventional meaning—as implying a person who abstains, not from all stimulants, but from the alcoholic varieties.

With the chemical composition of alcohol, etc., we need not concern ourselves. What we want to arrive at is some rationale, some reasoned-out regulations for its use or disuse. To do this satisfactorily, we must take into consideration the physiological characteristics of alcohol. In its local effect upon the tissues alcohol is an irritant. The reader can determine this for himself by placing in the corner of his eye a few drops of brandy or whisky, diluted with four times its bulk of water. Now, the lining membrane of the stomach is also

a delicate epithelial coating, not so exquisitely sensitive as is that of the eye, but analogous to it. A sane man, therefore, will understand readily that it is foolish to irritate his stomachic coating with strong alcoholic beverages; and that, in fact, persistence in so doing can be expected only to produce such a condition of stomachic irritation as will result in chronic inflammation, with, for one of its results, a more or less complete disorganisation of the digestion—alcoholic dyspepsia in fact. Alcohol is irritating to the tissues in degrees proportioned directly with its strength. The rule to be drawn, then, is that alcohol should be well diluted before it is taken and, except by express medical direction, should not be taken into an empty stomach; that it should not be taken apart from meals. It must be remembered that alcohol is not needed by the healthy. Its consumption by them is therefore supererogatory, and can be justified only by its strictly temperate use being found to add for them to the agreeableness of living. There is little evidence to show that the diurnal consumption, say of from one to one-and-a-half ounces of alcohol in the shape of brandy or whisky, some wine or other alcoholic beverage, exerts an injurious effect upon a healthy adult. This quantity, divided between two meals, should be oxidised completely, and usually will be if the consumer be physically active in habit. If the alcohol be taken in the form of a spirituous liquor it should

be diluted with water or aërated water ; if taken in the guise of a light wine or of malt liquor it commonly may be consumed without admixture. The justification for the use of alcoholic stimulant lies in the possible circumstance that the consumer finds that the consumption of a little at meal times improves his digestion and adds to the agreeableness of living. The influence upon the agreeableness of living is also the justification for the taking of tea at all, or in preference to, say cocoa ; or for the eating of mutton in preference to beef ; and, to my thinking, there is serene wisdom in Matthew Arnold's dictum, "Whatever adds to the agreeableness of life adds to its resources." Not being a necessity of life, there is no other moral justification for the consumption of alcohol—by the healthy. And so long as the amount of it consumed cannot be shown to make the consumer a less efficient social organism, whilst it may make of him a more agreeable one, it is difficult to see why, because we find that we add to the agreeableness of living for ourselves by the practice of teetotalism, we should pour out vials of unreasoning condemnation upon our fellows who do not find that abstention from alcohol has upon their lives a similar comforting influence. I know, of course, that an intemperate importance is likely to be given to the influence of example. It will be affirmed that because "A" can limit his intake of alcoholic stimulants to such quantity as adds only

to the agreeableness of living, "B," who has a weaker will, may be led by "A's" example into taking alcoholic stimulant which "B" cannot (will not is commonly the truer fact) so limit. One may as well say that because "C," a teetotaller, drinks too much caffeinic stimulant in the form of tea, therefore "D," a truly temperate fellow, should not drink any.

Alcohol acts as a stimulant to the digestion, and, as such, often enables the unhealthy, the fatigued, and the ageing to digest their food better than they otherwise would do. Its own value as a food is slight, compared with this quality of being an aid to the digestion of more nourishing viands. In fact, the real justification for the use of alcohol by the under-healthy is this stimulating effect it has upon the digestion, adding, as it does, to the better nourishment of the feeder, and therefore also to the agreeableness of living. It is, however, of the first importance, to the ailing, that alcohol should be administered as a dietetic agent with meals, and, if given in the form of spirit, diluted suitably, the precise amount being determined, in fact, prescribed by a doctor with the care with which such an one prescribes other medicaments. Alcohol does not increase the nutritive value of the food it helps to get digested, nor does it, except by getting the food digested better, aid directly in its absorption. The beneficial effect upon digestion is due to the stimulation of the lining membrane of the stomach, and upon the

contractile muscles of the heart. If too much alcohol be taken the stimulant passes into an irritant effect, and what is known as "gastritis" results. Used medicinally, however, alcohol causes the blood vessels of the lining membrane of the stomach to become flushed with blood, and this flushing leads in turn to increased activity of the digestive glands with which the gastric mucous membrane is studded, and causes these to pour into the stomach their special digestive ferments and secretions more freely. Then a characteristic of alcohol, as a food itself, is the fact that it requires no digestion. Its absorption, consequently, is easy and rapid. To get its best digestive effects one therefore partakes of a little alcoholic stimulant in the earlier stages of a meal. Everyone knows how constantly the preliminary consumption of a little stimulative food seems to get the stomach into trim for dealing with the more bulky constituents of a meal. This preliminary stomach flicking, particularly in those whose digestions are sluggish, explains the practice of commencing a meal with *hors d'œuvre*, or a few spoonfuls of hot soup, etc. It constitutes the rationale of the Russo-Swedish custom of providing a table of, what by them are found to be, tasty appetisers, to which the diners betake themselves before sitting down to the actual dinner. Commonly, these northern people take a little alcohol at the same time, in the shape of vodka.

Probably the Russians do so more generally because their snacks are furnished forth in a cold condition. That, at anyrate, is my experience. Now, a cold viand projected into the human stomach (unless the stomach owner be a vigorous digester) not infrequently retards digestion, notably in the case of the tired or overwrought—such as folk with the nervous temperament—are apt easily to become; in such an one, a cold viand may check and prevent the normal digestive processes from taking place for a considerable time, perhaps, indeed, inhibit them altogether. Herein, in my judgment, lies the rationale of the Russian's combination of vodka with his caviare, etc.

I have said that a little alcohol gives a fillip to the digestive glands, upon the proper functioning of which healthy digestion is dependent; and also spoken of its stimulative effect upon the system generally by reason of its practically immediate absorption. One effect of this absorption is that the heart is caused to pulsate more vigorously. Whenever the circulation is made brisk, a feeling of general physical well-being is produced, which we describe imperfectly as comfort. The experience of humanity being crystallised for us in the Biblical phrase, "Wine that maketh glad the heart of man." Increased activity of blood movement means, up to a certain point, increased activity of all our functioning organs, bodily and mental. They are all dependent for their food upon their blood supply.

Increase in the force and frequency of the pulse can be brought about by the sipping—that is repeated swallowing in small quantity—of any fluid: hot soup for instance. But apart from this physiological effect of sipping, be the fluid sipped alcoholic or other, and apart from the influence of alcohol as a form of food absorbed perhaps the most easily of any, there seems to be little doubt that alcohol acts upon the heart muscle directly. It causes the heart muscle to contract at once, and vigorously—an effect which, when carried to excess, is the explanation probably of the deaths which take place at times, and suddenly, after the swallowing of a large amount of alcohol in the shape of raw spirit. The heart muscles contract with such vigour that relaxation cannot take place, and death results. These are some of the considerations which justify the direction about alcohol. “In health, be guided by its influence upon the digestion; in disease, by its effect upon the heart.” It is the stimulative influence exerted directly upon the heart, and indirectly also, as a form of food absorbed easily and quickly, that has given to alcohol, in the form of brandy, such a deserved reputation as a restorative in acute prostration, fainting, etc. The fact, however, that when taken in the form of distilled spirit, “neat” or diluted insufficiently, particularly when the stomach is empty, the local effect of alcohol upon the gastric mucous membrane may be so stimulative as to constitute an irritant, must not be lost sight of.

Concurrently with the increase in the force and frequency of the beat of the heart which alcohol gives rise to, it causes dilatation of the smaller blood vessels. The dilatation of the superficial arterioles explains the flushing of the face, which follows so frequently the drinking of some alcoholic stimulant. The presence of this increased quantity of hot blood surging over the surface of the body accounts for the feeling of glowing warmth which accompanies it. This glow, however comforting, subjectively, to the person who experiences it, is a deceptive one, in that it ends in a loss of heat from the surface of the body, particularly where this is unprotected by non-conducting coverings. Thus it is that the subjective feeling of warmth is a deceptive one, seeing that it hides a real loss of heat by radiation. The drinking of alcoholic stimulants before going into a colder atmosphere for the purpose of "keeping out the cold" is an act of folly of the most practical character. Hot coffee is much to be preferred for such a purpose, and is far more efficacious, as is demonstrated by the experience of Arctic explorers. The sensible course is not to drink alcohol before going out into the cold, but after coming in from it, if you drink it at all. If, however, you deem the deceptive glow of warmth which alcohol will induce in your skin to be a sufficing compensation for the certain loss of body heat which it will give rise to, why I may deem you a fool,

but shall not deny to you the enjoyment of your folly. With the flushing of the skin with blood, as a result of consuming alcohol, there occurs also a flushing of the internal organs, brought about by the dilatation of their arterioles, a special effect of alcohol upon the vessels, together with a generally increased flow of blood, the result of its influence upon the heart. It must, in common fairness, be set down to the credit side of alcohol, that this general flushing of the system with blood which it brings about, may, and often does, lead to an increased activity of the depurative organs, and so cause to be swept out of the system much waste matter. As a rule alcohol, in the form of whisky or brandy, is consumed as a drink, with a good bulky quantity of some aërated water, in the form of what is known as "a long drink." Many strictly temperate men will tell you, and quite truthfully, that they find their general health improved by the practice of drinking a tumbler of whisky and potash, or seltzer or Appollinaris water, between their dinner and bedtime. In my private judgment, it is the effect of the combined alcohol and solvent water in flushing out the depurative organs that is productive of the benefit experienced—a benefit as undeniable as procurable by other agents, but most conducive to an increase in the agreeableness of living to many when brought about by whisky in some solvent water. Alcoholic stimulants, from their capacity as temporary excitants of

all the sensory centres, are part of the regular equipment of the tempters, be they male or female, to carnal lust, etc. In this direction their illegitimate use has ever been, and is now a potent engine of demoralisation. In excess, however, alcohol deadens the sexual, as it does all other appetites, except that for itself.

Now, whilst alcohol is a heart stimulant, it is not a heart food, and the too frequent application of the stimulus, like too many flicks with the whip to a willing horse, wears out the heart the sooner. Of alcohol, as a form of food, it is necessary to speak but very briefly. It spares fat, and to some extent can replace carbohydrates, and in so doing is itself consumed and yields heat and energy to the body. An ounce of alcohol yields as much fuel as an ounce of butter; but it by no means follow that alcohol is as good a source of heat as butter. Quite the contrary is the case, for alcohol by dilating the superficial blood vessels causes usually more heat to be lost than it produces. Moreover, alcohol is burnt up rapidly, and the heat it yields is dissipated quickly, whereas the heat given out by the butter is liberated in a more slow and deliberate manner. On the whole, it may be affirmed confidently that alcohol is a most costly and improvident form of food. A practical inference which may be drawn from its fat-sparing propensities is that obese persons should avoid the use of it—unless they have some heart

trouble for which it is ordered specifically; and that it may be of benefit to some very thin folk and to some diabetics, if prescribed medically. I have said that to take alcohol, as a form of food, is folly, the reason being that many other forms of food can supply its equivalents in heat and energy much more effectively and cheaply. It is, however, in disease that alcohol becomes invaluable, particularly when all power of digestion is lost, because it needs no digestion, but is absorbed into the blood directly. It is, in short, deserving of honour as a drug, and of courtesy as a dietetic agent.

Taken to excess, alcohol affects injuriously the tissues, especially the nerve cells. It acts upon these, and particularly upon the more unstable, as a poison. It paralyses the higher intellectual agents—the brain cells. The habitual consumption of alcohol to even the slightest amount beyond that which can be oxidised leads to marked degenerative changes in the nervous system, although the user may never once become intoxicated. The brain cells, being the most delicate pieces of our nervous mechanism, are specially sensitive to the influence of alcohol. It is through them that manifestations of intoxication first appear. After the preliminary stage of exaltation has passed (due chiefly to increased blood supply) a progressive loss of control over the intellect, the feelings, and the muscles sets in. It is only when

alcoholic intoxication is carried to extremity that the nerve cells acting automatically, those which control the action of the lungs and the heart, become involved in the alcoholic paralysis; then what is called a comatose condition results, and death may supervene.

The effects of the habitual over-consumption of alcohol are very insidious in their development. Any amount which exceeds the quantity which can be oxidised completely constitutes for that special consumer over-consumption, however moderate the total amount consumed may be. No condition approaching to intoxication may ever be apparent, and yet the habitual over-consumption of alcohol will bring about progressive and irreparable mischief. The nerve cells, being the most delicate tissues in the body, suffer first. Degenerative and other changes occur in other organs and tissues of the body, notably in the liver and in the coatings of the arteries. The nervous mechanism controlling motion suffers more proportionally than that controlling feeling. The effects of chronic alcoholism upon the morals of the victim are very marked, commonly. A loss of the sense of respect for truth is generally most noticeable. When I was in practice I soon learned to distrust utterly the statements of alcoholics, and particularly of female ones. Women, who drink to excess, will lie with outrageous pertinacity; even to their doctors. Unoxidised alcohol in the blood favours undoubtedly what we call "gout."

Gout is a very convenient term wherewith to express a condition in which there is defective elimination of waste products from the body—a condition apt to be set up in the over-nourished, the well-to-do idle, and all the sedentary, whether alcoholics or teetotalers. A practical guide for a non-medical person, to the effect of alcohol, is its influence upon the renal secretion. If the urine be rendered more copious and clearer, it is more likely to be doing good than injury, particularly if the intestines at the same time maintain their normal activity. If, however, constipation result or be increased, and if the urine when cold be loaded with deposit, particularly if any fine, ruddy granules, like unto grains of cayenne pepper, be precipitated upon cooling; or if a regular reddish deposit coat the interior of the containing vessel, alcohol is most probably doing mischief. In such a case it should be lessened, if not interdicted altogether, and more diluent fluid taken. The quantity of food, especially of meat and “sweets,” should also be lessened, or the amount of muscular exertion increased.

With a full knowledge of the fell influence which exerted by alcohol when taken to physiological excess, I am bound to say that I do not believe that the practice of consuming alcoholic stimulants is due to, what is called, “a depraved taste” in any appreciable degree. The physiological limit, it should be remembered, differs considerably in different individuals. It depends upon temperament,

age, general nutrition, the living of an active, open-air, or sedentary, indoor life, and a multitude of other factors. It is unphilosophical, not to say impertinent, to dogmatise upon the matter. Bearing in mind the gladdening effect of alcohol upon the heart, particularly if this be associated with benefit to the digestion, it is difficult for one to listen with patience to fatuous declamations against "the depraved taste" which leads temperate people to consume a little alcohol with their dinners. To make, in short, of their feeding dietary festivals. As to the injuriousness of the practice, I for one await the production of more satisfactory evidence than is furnished forth in platform verbiage. My own faculty of observation teaches me that the temperate drinkers of alcoholic stimulants are, as a rule, the temperate feeders also—speaking generally, more temperate eaters than are teetotalers.*

Let us hear the conclusion of the whole matter. Alcohol in any form is not a necessary article of

* Intemperance in feeding I propose to deal with later. I have heard a clerical dignitary who bore upon his person evidence of over-nourishment, "gross and palpable to sense," get up at a temperance meeting and proclaim, with disgusting unction, that *he* would not place temptation in any one's way by allowing alcohol, in any shape or form, to appear upon his table! To me the spectacle presented by that man was sickening, morally and physically. To bestow upon his over-fed carcase anything but water were to be guilty of ridiculous and wasteful intemperance! And I knew, too, that he did drink "ginger-beer," which contains usually about 2 per cent. of alcohol—the limit permitted by the Somerset House Authorities.

diet to the healthy. It is a food in the scientific sense, in that in its oxidation it yields up heat and energy. It is, however, of very limited practical value as a food, and is very costly. The most it can do is to replace a small amount of fat, and possibly of carbohydrate in the human dietetic laboratory. As a food it is about ten times dearer than bread, for example, and one has to remember that its effects upon the nervous and circulatory systems may, and do, counteract the benefit which might otherwise result from the production of heat and energy by it. Alcohol as a food is not favourable to the production of sustained muscular exertion, and may do positive harm by paralysing temporarily the sense of fatigue, which is nature's warning against excessive effort. The claim of alcohol to favour lies in the circumstance that it is a stimulant, the temperate consumption of which, at appropriate seasons, adds to the agreeableness of living. So long as its consumption does not affect the social value of the consumer, *i.e.*, does not involve any detriment to the race, I for one shall not find myself able to find an ethical claim to prohibit the indulgence.

The ritual of temperance in respect of the drinking of alcoholic stimulants, then, is for those in normal health to take alcohol only at meals, and not more than half-an-ounce at any meal. To take it then, only if its use be found to improve digestion, and to add generally to the agreeableness

of living. To take it, if a distilled form be used, diluted with many times its bulk of some diluent. To take alcohol at no other time, except by the express direction of a sage doctor. Distilled alcohol is consumed usually in the form of brandy, whisky, etc. The fermented alcoholic stimulants are beers, wines, ciders, stouts, etc. Apart from their greater alcoholic strength, there are grounds for believing that the distilled stimulants, unless they be very old, are more likely to be injurious than the fermented. One ounce of distilled alcoholic stimulant a day is about the average limit in quantity for a reasonably active adult; the equivalent in wines is represented by two glasses of port or Burgundy and three or four glasses of hock, claret, or champagne, or by one pint of beer. The idle and the sedentary should abstain rigorously.

The following reflections upon the drinking of wines, etc., may prove of interest. The wine drinker should know that all wines are more or less acid: that, in fact, you cannot procure a wine that is not, in some degree, acid in reaction. The best wines are those which contain the least amount of free acid. In my experience the addition of an alkali, say a pinch of bicarbonate of soda, sets up effervescence in every sort of wine. The natural acidity of wines is due chiefly to the presence of tartaric and tannic acids, and to acid salts. It is claimed, and justly, that the various acids and acid salts give

to wines a distinct value as dietetic medicaments, which can be "exhibited" thus most agreeably. It should, however, be obvious that just as alcohol is extravagantly costly as a food, wines are extravagantly costly medicaments. It is so much cheaper to procure the special salt or salts, and consume these separately as drugs simply: but drinkers of wines, and they be drinkers with good judgment, buy wines to obtain the volatile ethers and essential oils which are developed from the alcohol and salts contained in the vintage during the processes of its maturation. The "bouquets" and more or less exquisite flavours of really good wines are the final outcome of these subtle reactions. The volatile ethers so developed stimulate brain and heart, and probably add slightly to the intoxicating tendency of the alcohol with which they are associated. Everyone knows by experience that the feeling of exhilaration which is produced by the consumption of say half-an-ounce of alcohol in the form of two glasses of fine champagne, is much more stimulating, mentally, than the effect of an equivalent in alcohol in the form of whisky. It is the volatile ethers that give the sparkle to the blood as well as to the liquor. (The rationale of using old brandy for medicinal effects lies in the increasing amount of alcoholic ethers which develop with age). All wines, considered chemically, retard the digestive processes alike in mouth, stomach, and intestine. This retarding influence is due to the

“acids” and acid salts held in solution. It by no means follows that the final result of the temperate drinking of wine with meals is detrimental to the consumer: wines, so taken, increase appetite usually, and the contained alcohol and ethers stimulate the secretion of gastric juice so that the inhibitory influence is overborne and the digestion actually rendered quicker and easier than it otherwise would be. It will be agreed that the consumption of wine is a needlessly expensive method of “exhibiting,” therapeutically, the effect upon the body of certain acids, notably tannic acid, and acid salts, notably bitartrate of potash (Cream of Tartar) in association with alcohols, ethers, essential oils, and sugars—a fairly formidable compound, viewed as a prescription; one withal which the sage dietetist will prescribe with sparseness. No, it is from the æsthetic standpoint that wines appeal to the person who believes in the temperate use of whatever adds to the agreeableness of living. The bouquets, the flavours, the colours, the nimble sparkle of a golden-tinted effervescing, and the ruddy reposefulness of red, still wine. These add vastly to the decorations of a table, and aid delightfully in transforming a meal into a dietary festival.

I can well understand a diner doing what I not infrequently do myself, viz., having a glass partly filled with a wine he does not desire to drink, inhaling its bouquet and then keeping it near to him

for its value as a decoration to the table. A delight to the eye with the colour effects one can secure from the scintillations of light upon its surface (well below the rim), seen through the prismatic cut-glass screen. Extravagant waste do you say? Nonsense! The whole meal may be condemned with equal injustice. Suppose, for the sake of argument, that the partially-filled glass of wine I may use as a decoration costs sixpence (an extravagant estimate), will not as much have been paid for the rare tulip or other, perhaps to my thinking, ugly flower which you may prefer? An exposition of neither the ethics nor of the æsthetics of dining is, however, my present purpose. I confess to finding at dinner tables few things more beautiful to look upon than a tall, tapering column of golden-tinted wine; for I bear in mind the Scriptural precept, "Look not thou upon the wine when it is red; when it giveth his colour in the cup" (they must have been copious drinkers in early days!). Lest, being gouty, I find that "at the last it biteth like a serpent and stingeth like an adder," which leads me to affirm that all wines containing free acids are hurtful to the gouty, the combination of acids with sugars being the source and occasion, in my belief, of their mischievous influence. The addition of an alkali, say bicarbonate of soda, will neutralise all free acid, and, alack, alter the flavour; and often the colour also, only too effectually. Ciders, in my experience, invariably are acid.

Beers, stouts, etc., what are known as "malt liquors," are the most nutritious of the alcoholic stimulants. Their food value they owe to the carbohydrate (starchy matter) they contain. A pint of ale, for example, contains as much carbohydrate as an ounce of bread. The preference which the limb-labourer gives to beer as his favourite alcoholic beverage has thus a real rationale. The alcohol and the carbohydrate in the beer make it, as he knows by personal experience, a yielder of a considerable amount of energy, as well as of bodily comfort—an adjunct to their meals, which adds to the agreeableness of living for those whose lives are spent chiefly "’twixt labour and the rest that is not ease." As a yielder of energy, a gallon of milk, for instance, represents 180 units, and a gallon of beer 160 units. Beer is not, however, to be regarded as so prudential a source of energy as is milk. We know already that alcohol is an improvident form in which to partake of food, apart from its costliness, because its total effects upon the body so often are injurious. However, this is the region where taste is supreme. The consumption of beer is found to add more to the agreeableness of living than does say the consumption of milk, and gets the preference naturally.

So long as the quantity consumed does not make of the consumer a less effective racial agent, I fail to see why such a preference should not only be accorded, but also be respected, even upon

platforms. There is *per se* no sin in this preference, albeit the teetotaller may hold that there is no sense. The combination of alcohol and carbohydrates in beers and malt liquors generally makes them conducive to obesity, and they predispose the injudicious drinker to goutiness very efficiently. Upon badly-sleeping, neurotic people malt liquors (and bottled stout especially) often exert a sedative influence, soothe the nervous irritability, and induce sleep. For such folk they make an excellent supper drink: or, if the neurotic dine late, and he or she should dine lightly, a small quantity may be taken with, say a sandwich or a biscuit just before or immediately after getting into bed. Neurotics, however, generally have irritable digestive organs, and the good effect such people may obtain from bottled stout as a sedative too often has to be paid for in dyspepsia and derangement of the functions of the liver, etc. Now, stout is an acid drink, the most acid of the malt liquors. The combination of acid, sugar, and carbohydrate matter is one likely to set up fermentative changes in the stomach, and so lead to flatulent dyspepsia, etc. Much of this is preventible if the stout or beer (or wine) have all free acid neutralised with, say bicarbonate of soda, potash, or lithia before the beverage is imbibed. On the addition of an alkali to malt liquor effervescence always results, the volume being proportionate with the amount of displaceable acid in the liquor. The flavour of

the drink is altered, sometimes radically, but by no means always disagreeably; and after neutralisation it can often be borne without dyspeptic trouble resulting. The sleep producing influence of beer has been ascribed to "Hopein," a soluble constituent of the hop. Beers, it should be remembered, are bulky drinks, and the disposal of an undue quantity of them throws labour upon the heart, as does the disposal of any large quantity of fluid which may be introduced into the circulation. Wherefore, the wise man will show consideration unto his heart and take these and all drinks, including water, apportioned temperately. Beers are unsuited to people whose occupations are sedentary, largely, I think, in consequence of the fermentative changes set up after digestion. A dull, heavy, dyspeptic sluggishness is then the almost invariable result of their consumption. Outdoor life and active physical exertion go better with beer drinking at meal times. And, remember, it is a cardinal rubric of the ritual of temperance that you take alcoholic drinks only with food, except you are ordered expressly to do so at other times by a sapient doctor. Malt liquors, on the whole, delay the chemical processes of digestion. (All acid drinks certainly seem to have a retarding influence upon the conversion of starches into soluble sugars in the mouth). These effects, however, are compensated for commonly by the bitters in the beers bringing about a more profuse flow of saliva

in the mouth, and the alcohol inducing more active muscular movements of the stomach and a more abundant outflow of gastric juice.

P.S.—The most salubrious “nightcap” is a tumbler of choicely hot water containing a slice of lemon *only*!



(b) CAFFEINIC STIMULANTS.

IN this country these are consumed usually under the forms of tea, coffee, and cocoa. They are partaken of in nearly all countries, in some form. Practically all peoples who can procure caffeinic stimulants consume them: this instinctive and almost universal consumption of them leads one to infer that caffeinic stimulants supply some want in the human economy; and unless this be so, the practice constitutes a very remarkable variation in man's generalised habits. For it will be found that no dietetic custom is diffused widely amongst mankind that has not its basis in some practical utility, or did have, and has remained a habit after the occasion for its practice has disappeared. The circumstance that practically all peoples who can do so concoct some alcoholic

beverage, and consume it, may of course be held to be *primâ facia* evidence that alcoholic stimulants also supply some want in the human economy felt instinctively. This is a proposition, however, which many will not assent to. I am not concerned to press the point, beyond expressing a belief that the void has been the subjective want of gladness of heart. Man, we are told, being "born into trouble as the sparks fly upward." Analogy one knows is not argument, however apposite as illustration, and I will betake myself forthwith to a consideration of the characteristics common to all caffeinic stimulants, and then proceed to enunciate the rubrics for their temperate usage.

In what follows I speak primarily of caffeine, the stimulant people imbibe when they take tea, coffee, and cocoa, etc., as the drinkers of whisky, wine, and beer consume alcohol. The tea or whisky, etc., being but a more or less agreeable "vehicle" in which to "exhibit" the drug. Caffeine or theine is what is known in therapeutics as an "alkaloid." It is, if we may use such an expression, the inmost core of tea, coffee, and cocoa, viewed as drugs. Caffeine, so to speak, is the quintessence of the medicinal plant we call tea. There is good reason to believe that this alkaloid is the stimulant for which people experience what is called an instinctive need, and for which they feel a considerable craving. To secure it they swallow tannic acid, essential oils, xanthine, and other drugs, which are combined with it

in tea, etc., with great improvidence. Caffeine exerts its stimulating influence primarily upon the nervous system, not upon the circulatory, as is the case with alcohol. After its consumption, the time occupied in the completion of nervous processes is shortened, and nervous excitability is heightened. This influence is experienced generally in a subjective feeling of brightness. The mind especially becomes alert. Indeed, the stimulating effect of caffeine upon the brain is apt to induce sleeplessness. Argal, it is imprudent to consume caffeinic stimulants at night, for at anyrate most people, though not necessarily for everybody. Personal peculiarity here plays a part.

Another effect of caffeine is a removal of the sense of fatigue, and herein also lurks a danger in its unauthorised consumption, unless we at the same time remove the cause of the fatigue. Caffeine causes the respirations to quicken and deepen, and so promotes a more effective aëration of the blood ; it also induces the heart to beat more rapidly, and with greater force. Now, whenever the circulation is made brisk, and we get our blood distributed equably, we experience the subjective feeling of well-being which we endeavour to define by the name of "comfort." Increase in force and frequency of the heart's action induce, almost invariably, increased activity of the depurative organs, and the more profuse and excretory exudation from these aids in the removal of waste materials from the blood.

Caffeine, moreover, seems to exert and, *per se*, a direct stimulant effect upon the renal cells. The flow of urine is increased almost invariably. Waste products floating in the blood are, in and of themselves, deadening to the intellect—markedly so in excess. The removal of them, which is effected by the consumption of a hot solution of caffeine, even when associated with other drugs, is the physiological explanation of the effect, ascribed to tea, of “clearing the head.” Such evidence as we at present possess favours the belief that caffeine, apart from tannin, essential oils, etc., aids rather than retards the digestive processes;—I think, through its stimulating influence upon what is known technically as “involuntary” muscle fibre, *i.e.*, that of the muscles which act independently of the conscious will—such as those of the heart, stomach, intestines, etc. From what I have said an obvious inference is to be drawn, viz., that people with excitable or ill-balanced nerves need to practice a prescribed ritual in the consumption of caffeinic stimulants, be these called coffee, cocoa, or tea.

So much said upon caffeine generally, I will now go on to discuss the more common vehicles in which it is consumed in this country—tea, coffee, and cocoa. And first as to “tea.”

Dr. Hutchison* tells us that “tradition has it that there was a holy Asiatic, Prince Darma, who spent his nights in meditation on the infinite. One

* *Food and the Principles of Dietetics.*

night his ecstasy was disturbed by sleep. On awaking, he was so enraged at his weakness, that he cut off his eyelids and flung them on the ground. On visiting the spot some time later, he found that where each eyelid fell a small shrub had grown up. He infused the leaves of the shrub, and ever afterwards, by simply drinking some of the infusion, he was able to keep sleep at bay. That shrub was the tea plant!" This charming piece of oriental allegory I quote because it brings into prominence the primary value of tea as a drug, viz., that of being a nerve stimulant. Tea is also notoriously a great stimulator of talk, and, according to some, to the talking of scandal. One of the best entertainers I have ever heard of attributed the success of his afternoon parties to the stimulating effects of the two beverages he always provided, and took care to have proffered to his guests as promptly as possible; potent but freshly-prepared China tea and fine champagne! The caffeine in the one, and the alcoholic ethers in the other impelled his visitors to talk.

It will tend to clear our minds of confusion if we get rid, once for all, of the notion that tea in itself has any value directly as a food. It has none. The addition of milk, cream, or sugar to tea converts the resulting compound into a food, but its nutritive value depends upon, and is derived from the sugar, cream, or milk, and not from the tea. Tea, in solution, is just a caffeinic stimulant associated with tannic acid and some aromatic oil, etc.

Besides caffeine, we have to take note of at least these two other constituents of tea, *i.e.*, tannic acid and the essential oil. It is to the latter that the aroma of tea is due. There is reason to believe that it is partly to the essential oil, aided by the hot water, that the flushing of the face, which supervenes so frequently upon the drinking of tea, especially of "fragrant" tea, is due. The essential oil, as well as the caffeine, acts upon the nervous mechanism which control the small blood vessels and causes the superficial ones to dilate. It is by this dilatation of these arterioles that the phenomenon of "flushing" is produced.

Tannic acid, or tannin, is a powerful astringent drug. For people with relaxed mucous membranes it may be of physiological benefit, but to normal, healthy mucous membrane, particularly in the stomach and intestine, it is deleterious unquestionably. Indeed, applied repeatedly to an empty stomach, it sets up, by its astringing irritant effect, a special variety of the national ailment, which is known as "tea dyspepsia." I need not here enlarge upon the signs and symptoms of tea dyspepsia; the earthy sallowness it imparts to the complexion; the worn and anxious look it imparts to the face (a characteristic, by the way, of pretty well all dyspepsias); the real "disjected 'haviour" it imposes upon the visage; the obstreperous flatulence and oppressive sense of internal distension which afflict its victims, etc., etc. No, I need only

now remind my readers, that in drinking tea as prepared ordinarily, they swallow, willy-nilly, tannic acid. A simple calculation will tell anyone how much tannic acid he or she swallows in a day. In an ordinary cupful of tea, which has been infused for three minutes, there will be two-and-a-half grains of tannic acid in solution; if the tea infuse for five minutes, double that amount; if for a yet longer period, more than that amount. In fact, the longer tea "stand" the greater will be the proportion of tannic acid it dissolves. Tea that has "stood" for more than five minutes ought only to be used as a gargle—for a relaxed throat!

Now, bearing in mind the fact that tannic acid is a powerful astringent, is it a far-fetched inference to assume that there is a relationship, not only between intemperate tea drinking and a common type of gastric dyspepsia, but also between that vice and the torpor of the intestines which is so prevalent? According to the *Statist* (1904), about 200,000,000 lbs. of tea are consumed annually within these islands: 10 to 12 per cent. is given by Dr. Hutchison* as the average proportion of tannic acid in tea leaves. To keep well within the mark, we will take the lower figure, 10 per cent., as representing the normal average proportion of tannic acid. We will further assume that not more than 60 per cent. of the tannic acid contained

* Op. Cit.

in the tea leaves passes into solution—a generous rebate—and that the residue remains undissolved. Even then some 12,000,000 lbs. of tannic acid are swallowed annually by the people of these islands, in the guise of tea. Is it unreasonable to expect the ingestion of this drug to have a definite tendency toward an astringency of the entrails? Even if the tannic acid be swallowed in doses not greater than five grains at a time, and in dilute solution, “it stands to reason” that the continuous imbibition of these doses of an astringent drug must tend to “bind up the bowels”—to disregard for the moment the special gastric dyspepsia which results from tea-tanning the stomach. I leave the consideration of these things to be ruminated upon by the good sense of any reasonable being. “Common sense” I shall not dream of appealing to, because “common” sense, like most things common, is, in my experience, of very low average quality. I appeal to the good sense of my reader. A reasoned consideration of these factors in a rationale of national healthiness makes one realise how it is possible for it to be a true statement of facts for a man to say, as a learned geologist did to me lately, “tea does more harm than beer.” I ought, I think, to add that my learned friend—learned in the lore of more than geology—made use of the above expression upon the occasion of an afternoon tea party in his own delightful garden! Of course he meant tea prepared im-

properly and drank intemperately caused ill-health, just as does the intemperate consumption of beer.

Besides tannic acid, some pectic acid is commonly to be found in tea. The beverage always has an acid reaction. This you can prove to yourself, by adding a pinch of some alkali—say bicarbonate of soda—to a cupful of any sort of tea. Effervescence will result. Argal, the gouty and rheumatic, for whom acids are harmful, should neutralise the acidity of their tea before imbibing the beverage. Dr. Haig prohibits tea, etc., altogether.

Having thus dealt with the more important individual constituents of tea, we can turn to its compounded qualities as a beverage. And first of all I must point out that, to prepare really good tea, only water which has just come to the boiling point should be used for the infusing of the leaves. The vessel in which the tea is to be “steeped” should be warmed before either the leaves or the water is added. A “hard” water is ill-suited for the judicious “drawing” of tea. A “hard” water may be made acceptable as a medium for the “exhibition” of tea, by being mixed with distilled water in varying proportions, or may be imperfectly, but still acceptably, “softened” by having a few grains of bicarbonate of soda added to it—say $2\frac{1}{2}$ grains to each pint of cold water, or more or less, according to taste of the drinker and the hardened character of the water. Too soft a

water, on the other hand, must not be used for infusing the tea, or you may extract a bitter from the leaf which will prove disagreeable in flavour. Practically all the caffeine, or theine as it is sometimes called, which, remember, is the stimulant, you drink tea to procure, practically all the caffeine dissolves out of the tea leaves in the course of three minutes. A sage preparer of tea will therefore not infuse his tea for a longer period. Lengthier infusion only increases the disproportionate solution of tannic acid, which astringent no sensible respecter of his interior will want to swallow unless he or she have chronically relaxed mucous membranes. On the expiration of three minutes the tea in solution should be decanted from the leaves, either into the cup from which it will be drank, or into a containing vessel, warmed previously. It is well to pour away the first half-cupful of the brew, as a fine sort of scum will thus commonly be got rid of. No second infusion ought ever to be made from one set of leaves. Any such solution is bound to be virtually a solution of tannin—good to use as a gargle for a relaxed throat, doubtless, but certainly not good to apply to even a long-suffering stomach.

Caffeinic stimulants, like the alcoholic, are best taken with meals. Tea should not be drank by itself unless it be dilute and as free as possible from tannic acid. Whenever so taken, a little cream or milk should be added. Milk is said to

combine with and to precipitate a portion of the tannin. Sugar makes the concoction nourishing. The average well-to-do person over-nourishes so chronically that the stomach is seldom really empty at almost any period between the mid-day and the evening meal. A cup of tea, therefore, taken by such an one during the afternoon will rarely be ushered into an empty receptacle, and the caffeine may be needed to counteract, to some extent at any rate, the obfuscation of the intellect, which results from the by-products of the imperfectly digested, because superfluous, viands engulfed at luncheon. I infer shrewdly from the results of my personal observation and professional experience, that intemperance in feeding, rather than in drinking, is the more generally prevalent vice in these days among our well-to-do, idle people. I've sat at a luncheon beside a wealthy person, a notorious total-abstainer, who ate a very intemperate meal, to my thinking, and subsequently took the chair at a temperance meeting and spoke with unction upon the vice of over-drinking! I have no sort of reason to believe that such incidents are uncommon. We all of us are conscious of an invirtuous impulsion towards "compounding for sins we are inclined to, by damning those we have no mind to!" and this very human characteristic becomes most pronounced, perhaps, in the way we tackle "the temperance problem."

To revert, however, to drinking of tea; it must

be noted that tea checks the normal conversion of starches into soluble sugars *in the mouth*, where starchy viands ought to be converted by the buccal secretions into more soluble forms of food, and so fitted for absorption—bread, biscuits, cakes, etc., are starches. Wherefore, a piece of bread and butter say should be masticated thoroughly, and swallowed before the eater sip even a spoonful of tea. The addition of a little bicarbonate of soda to the tea gets rid of this inhibitory influence upon the proper conversion of starches in the mouth, which leads one to infer that the interference is due to the presence of some free acid in the tea. The scientific way of consuming tea with food is to first eat your bread and butter, etc., and then to sip your tea, taking the fluid rather toward the end, than at the beginning, of the meal. Tea is often drank too hot, and to the injury alike of teeth, gullet, and stomach. People will gulp it down at temperatures which would, if they made a bath of the fluid, scald their skins.

I have already said that sugar adds nutritious material to the tea. The over-nourished ought, therefore, to deny to themselves this adjunct. A little cream imparts a seductive smoothness, which is “grateful—comforting.” Cream, however, is a concentrated fatty food, and therefore should be banned by the over-nourished ; or, if taken, the indulgence should be associated definitely with the deletion of some equivalent at luncheon. A very

thin snippet of lemon is added by Russians to their tea. It imparts a flavour which, to most drinkers of their tea, is very acceptable; and, provided that tea be not prepared anywhere with a hard water, a snippet of lemon will be found generally to be an agreeable adjunct. If a hard water be used, the addition of lemon will prove to be a mistake, and result in a disappointing failure to impart greater agreeableness to the liquor.

China teas contain the lowest proportion of tannin relatively, and, unfortunately, also the smallest amount of caffeine; but the flavour of the finer varieties, when infused with a suitable water, is very delicate. On these accounts China teas are not likely to obtain widespread popular favour.

Ceylonese, Indian, and Assam teas, the latter especially, contain more tannin and also more caffeine; and all these varieties have a more pronounced and rougher flavour than have the China teas.

Japanese tea has a peculiar bitter flavour, but is, I am told, liked in America. It can be infused with great rapidity, the leaves being crushed into a sort of powder.

Whatever tea is used, the leaves should be infused for three minutes only, so as to get as large a proportion of the caffeine in the solution with as little of the tannin as possible. Bear in mind the fact that the longer you infuse tea leaves the greater is the relative proportion of tannic acid you will extract

from them. And remember, oh, my reader, that you cannot prepare really good tea with either too hard or too soft a water. What you want is a water "betwixt and between," just brought to its first boil. There are good grounds for believing that after being drank, the major portion of the tea remains in the stomach for from one to one-and-a-half hours. Tea should, therefore, not be drank with meats, as it interferes with peptic digestion. Such evidence as we possess favours the belief that caffeine, *per se*, favours rather than retards stomachic digestion. The inference follows, and with myself it is a belief, that the disturbing influence exerted by tea upon peptic digestion is to be found in the tannin and the essential oil taken in with the tea. I find that caffeine, taken alone, improves rather than retards peptic digestion, and I use a hot or cold solution of caffeine often, flavoured with a little lemon, as a drink at meals; and both enjoy drinking it at the time and derive benefit from its imbibition. But when all is said, I expect that the greater portion of my readers will go on preparing tea injudiciously and consuming tea intemperately. If they die for it, the votaries of the teapot will continue to kow-tow to *Thea*; nay, even in extremis, paraphrase the acclamation of the Roman gladiators and exclaim "*morituri te(a) salutant!*"

I pass on now to the caffeinic stimulant we call "coffee."

Johnson, in his *Physiology of Common Life*, tells us that "in antique days a poor dervish, who lived in a valley of Arabia Felix, observed a strange hilarity in his goats on their return home every evening. To find out the cause of this he watched them during the day, and observed that they eagerly devoured the blossoms and fruit of a tree which he had hitherto disregarded. He tried the effect of this food upon himself, and was thrown into such a state of exaltation that his neighbours accused him of having drunk of the forbidden wine. But he revealed to them his discovery, and they at once agreed that Allah had sent the plant to the faithful as a substitute for the vine." The plant upon which those sapient goats did browse was the *Caffæa Arabica*, whose flower is a pure white one with a rich and fragrant odour, and whose fruit is somewhat like unto a cherry—what we call the "coffee bean" corresponding (duplicated) to the stone in a cherry. The mental exaltation and general hilarity referred to bring into prominence the physiological effects of coffee consumed *à la dervish*, that is when the "all-together" is eaten in the "raw" condition. In the form of an infusion of the crushed and roasted bean, coffee is consumed by ourselves for its effects as a caffeinic stimulant. It has also extended to it, and deservedly, great favour on account of its fragrance. As is the case with tea, the stimulating influence exerted by coffee upon the nervous system is due to the alkaloid

contained in the bean—*caffeine*. The physiological effects of caffeine I have given in sufficient detail already, and shall therefore betake myself to a brief consideration of the preliminaries to the judicious consumption of coffee; the rationale of the roasting of the bean; the concoction of the infusion; and the sage method and dietetic purport of drinking that caffeinated beverage.

To get at what we call the beans, the coffee berry is fermented and the pulpy part removed. The beans are found in couples, placed face to face, and enclosed in a husk. This husk is dried well, and then separated by a process of rolling. Then a delicate filmy skin is detached, and the nude "beans" are assorted, according to size, etc. It is in this naked condition that coffee beans are proffered in the English markets.

I shall not attempt to deal here with the ethics of a commercialism which makes it possible to sell, as "Mocha," coffees which have never even passed through Arabia. Much, indeed, of our "Mocha" comes, I am told, from the West Indies. What is tolerably certain, is that precious little of the genuine Arabian Mocha, and of the finest qualities practically none, ever travels west of Cairo and Constantinople.

Some of the West Indian coffee is, fortunately, of very good quality. East Indian coffees, including Ceylonese and Javanese, are good average coffees; and the Brazilian, on account of its special flavour,

is used largely for admixture. Costa Rica coffee is commonly coarse in all ways. The East Indian coffees are richer in caffeine and the caffeic acids than the Mocha, but contain less of the natural fat, less saccharine, nitrogenous, and colouring matters, upon which depend, probably, the smoother taste and more delicate flavour of the Mocha. In the estimating of coffees by epicures, flavour is the quality esteemed most highly.

In this instance, the finest flavour is associated with greater intrinsic nutritive worth ; albeit, the food value of any roasted coffee is so small as to be negligible. To get the fullest possible food value as well as the greatest amount of caffeine from coffee the raw beans must not be roasted, but pounded (and they'll take a deal of pounding) in a mortar to a coarse powder and then infused, with occasional stirring, for about twelve hours in cold, reasonably soft water. The resulting infusion will be milky-green in colour (which explains, perhaps, why the unroasted slatey-grey beans are called "green"), and will have no ravishing odour. But as a nerve stimulant and exertion sustainer, it surpasses easily any and all of the beverages brewed from roasted sorts—using equal quantities of the coffees.

Now, the rationale of the roasting of the coffee bean is the attainment of two results : (*a*) the rendering of the bean more brittle, so that it can be ground or pounded with greater ease, and (*b*)

the development of an aromatic oil, *cafféol* or *cafféone*, to which is due the appetising aroma of coffee, that fragrance which is so delightful to the sense of smell. Who, that has watched his coffee go, without intermission, through all the stages of its progress, from the "raw" berry to the filled and steaming cup, will ever forget the fragrant odours wafted to his nostrils? The process of roasting causes the coffee bean to lose about one-tenth of its natural fat, and, unfortunately, about one-fifth of the *cafféine* also. If the beans be over-roasted the loss in *cafféine* will be greater, and the natural fats converted into fatty acids. The infusion made from over-roasted coffee has its acidity increased unquestionably; becomes at times, in fact, downright acrid. Coffee in England is over-roasted usually. English folk like to have the colour of their coffee blackened, as well as its character. An infusion of coffee, to be perfect, should not be much deeper in tint than is a rich chocolate. Go to Vienna, where coffee begins to be good, and note the colour of the liquor, and then we may hope that you will go yet farther eastward, and finally come home with a chastened palate. Chicory tends to blacken coffee and is, *per se*, a blackguardly article of diet.

A prodigious lot of common nonsense is talked, by sentimentalists, about the advantages of roasting your coffee at home, in preference to purchasing the beans already roasted from the grocer. Crush

or pound your beans at home by all means, but unless you are going to roast your coffee in the room where you will imbibe the finally resulting liquor, a very little reflection should shew you that the odour exhaled by the *cafféol*, as it is developed, will be the possession of your cook in the kitchen. That functionary may deem these odours a very inadequate return for the labour! Even when you have the already roasted beans ground or pounded at home, it is the cook who reaps the primal harvest of the odours yielded: what you get at table being at the best an aftermath. What can people know, really, about the “delicious” scent of coffee, who inhale only the bedraggled remnant of its charm—at table? It is the roaster, and after him the grinder, and then the infuser, who takes toll of the more delicate *cafféolic* odours, not you the mensal recipient of the remnants. Wherefore, it is unphilosophical, not to say unreasonable, in you to put your cook (who may detest *cafféolic* odours) to needless trouble in preparing “coffee” for such a fatuous consumer. If you wish to provide a *cafféolic* festival for your probably smoke-dried nostrils, you must roast, pound, and infuse your coffee, and infuse it, mind you, in a specially-chosen water, yourself, and then it is quite possible that you will not care to drink the liquor: its scent will have degenerated into such “a very ancient and fish-like smell.” A compromise, one can tolerate, is effected if the

freshly-ground coffee be infused in your feedery. This you can do with the help of a spirit lamp (burning rectified, and *not* methylated spirit) at the actual table.

Coffee, to be worth drinking, must be both strong and *hot*. How many hostesses despoil their dinners, and demoralise their guests, by serving soups and coffee tepid ! Two ounces of coffee will make a pint of tolerable infusion, to be used undoctored, except with cream or sugar, at breakfast. If you mix hotted milk with it, the infusion should be stronger. For *café au lait* (a mortal, bilious confection !) three ounces of coffee to the pint should be used. A pint of after-dinner coffee may require four ounces of the pounded berry ; and certainly will do so, if it is expected to counteract the obfuscatory influence of average "society" provender. Now, not only is it well to have your coffee freshly ground, but you must see that no scrap of stale coffee is left in the grinder before you begin to crush each special lot of beans ; otherwise, the brew will be productive of chagrin. The Syrian and true Asiatic way is to pound, and not to grind coffee. The water used for the infusion should be just upon the verge of boiling. You must dilute too "hard" a water with distilled water, or, if that be too troublesome ; (and not one professed lover in fifty is a real devotee of coffee, for, to such an one, no trouble is too great), to mollify a hard water, you can soften it, to some

extent, by adding a little bicarbonate of soda, before you heat it. Carry out the infusory process in an earthenware vessel. Some people add chicory to their coffee, even to the extent of a tenth. With these it were useless to argue. Doth not a Spanish proverb assure us that, "He wastes soap, who washes a donkey's face"? The practice of infusing coffee in a metal vessel is not to be commended, but the practice of keeping the infusion exactly at the simmer for three minutes is worthy of our imitation. The said simmering should take place in a covered vessel. Whether the fault lie with Britannia's metal, or with our generally hardened waters, that coffee prepared in metal vessels is vitiated in flavour; or, as I think, with our noxious practice of over-roasting coffee, I leave for the present *sub judice*. Over-roasting increases the acidity of coffee undoubtedly, and so probably leads to the setting up of some chemical reaction between the acid coffee and the metal; but had I to issue ordinances for the preparing of coffee, I should ordain, *imprimis*, that the bean should not be crushed, prepared, or served in metal vessels! Nay, I go further, and add that the genuine connoisseur will select a glass spoon in preference even to silver "Apostle" spoons with their bowls ungilded.

You always can rely upon getting acid "black" coffee, doctored copiously with chicory, prepared and served in metal vessels, and generally in-

sufficiently hotted, on the other side of the channel. Connoisseurs know that France is the one country in which you can obtain really fine chocolate anywhere, but that, except at a few resorts, the treasured havens of the cognoscenti, your palate must be debauched by the execrable French café. Remember, oh my reader, that the finest coffee, roasted fitly, yields a rich, deep brown liquor. Over-roasting causes the beverage to become more sooty-looking, but such a liquid bears upon its surface the evidence of ill-conditioned handling. Moreover, the cafféol or other by-products of roasting, and, in particular, of over-roasting, act as direct irritants to the gastric mucous membrane.

A teacupful of fairly good coffee (two ounces to the pint) contains nearly two grains of caffeine, and between three and four of tannic acid: rather more caffeine and rather less tannin than does the corresponding fluid quantity of tea. There is, relatively, more caffeine in the leaves of the coffee plant than in the berries. It has been suggested that the leaves should be infused as one infuses those of the tea plant, and they are so used, I believe, in Sumatra. But the facts of the leaves being destitute of aromatic odour, and the infusion not being palatable, *per se*, makes against the adoption of the practice. Moreover, it does not seem possible to obtain leaves and beans from the same coffee plant; and as the demand is for the latter, the plants are not grown for their leaves. Probably

the best medicinal value would be obtained if the leaves and flowers of some plants were infused with the roasted and pounded beans obtained from others.

When people begin to require some rationale for drinking coffee, other than the fact that their parents provided it, and so they have grown from habit to like it, or what comes to much the same thing, to believe that they like it, the wisdom of using leaves, flowers, and seeds together may be considered. For, without doubt, there is a good deal yet to be learned about the truly sensible preparation of coffee! As a quasi-medicinal adjunct, coffee is valuable for its qualities as a stimulant to the nervous and circulatory systems. These qualities are due to the caffeine and essential oils contained in the bean. The natural fat, combined with the tannin in coffee, makes the beverage for many a bilious drink. But, speaking generally, coffee produces, in the majority of its drinkers, a feeling of buoyancy and exhilaration comparable to a stage in alcoholic intoxication, which, however, does not end in depression or collapse, as does the temporary alcoholic uplifting. Coffee (it's caffeine, really) increases the frequency of the pulse, lightens the sensation of fatigue, and enables the muscles to sustain prolonged exertion. Its preferential value as a drink which enables one to endure the rigour of cold, compared with alcohol, has been demonstrated irrefragably by Arctic explorers. One or other of the essential oils

in coffee appears to affect the blood vessels differently from the essential oil contained in tea. That, you remember, like alcohol, causes the superficial vessels to dilate, and so leads to flushing, and even to moistening of the skin. The contrary effect of coffee, generally speaking, probably explains the preference accorded to coffee as a caffeinic stimulant alike in Arctic regions and in hot countries, especially after sundown. There is less evaporation of body heat, and the skin is kept relatively dry. A dry skin is an important element in physical comfort in hot climates—a moist skin giving one the impression of being swathed in a poultice. The good effects of coffee, for those it suits, upon the digestive and depurative organs, are due to its caffeine, the hot water, and, probably, one of its oils. Its ill-effects are due to its acidity, which is more pronounced than is that of tea, and is always increased by over-roasting; to the tannin, less considerably than that found in the proportionate quantity of tea, and to its fats. The ill-effects of the first and last constituents can be mitigated by adding bicarbonate of soda, potash, or lithia to the beverage. The addition of a sufficient quantity of some alkali, to neutralise all free acid, is essential if coffee is to be tolerated by the gouty. Caffeine is a physiological antidote to alcohol. Hence, the rationale of the practice of taking coffee after dinner—a practice arrived at intuitively by the drinkers of wines, etc. Coffee, meaning thereby

caffeine (associated with tannin and other undesirable adjuncts) in hot solution, being a pronounced nerve stimulant and excitant to the brain; whereas alcohol, once its brief exhilarant influence has been exhausted, tends to dull and obfuscate the intellect. People with excitable brains and unstable nerves need therefore to consume caffeinic stimulants with caution. As is the case with alcoholic stimulants, they should not be taken except by express medical direction, apart from meals. Cocoas are safer.

When coffee was first introduced into this country, its influence in stimulating thinking, and in clarifying brains, was so marked that Charles II. tried to suppress coffee dramming by Royal proclamation; in the which, coffee-houses were declared to be the resort of disaffected persons, "who devised and spread abroad divers false, malicious, and scandalous reports, to the defamation of His Majesty's Government, and to the disturbance of the peace and quiet of the nation!" Even in Pope's day, coffee dramming had such political potentialities attached to it that, in *The Rape of the Lock*, he apostrophises it thus:—

"Coffee that makes the politician wise,
And see through all things with his half-shut eyes."

From which couplet I leave would-be parliamentary front-benchers to draw improvident inferences.

The third caffeinic stimulant, known as "cocoa," differs in several ways from its congeners. First of all, its caffeine differs in chemical composition, and

is, in fact, known as "theobromine." It is present in the proportion of not more than 2 per cent., usually less. Then, its tannin is not of exactly the same astringent type as that found in tea and coffee : being associated with a pigment called "cocoa-red," but the relationship has not been exactly determined. Then again, cocoa contains a great quantity of fat (cocoa-butter), the native bean containing as much as 50 per cent. ; it also contains a considerable amount of nitrogenous matter, and some starch ; and generally, in the form of the bean, cocoa approximates much nearer to the status of a food than does the tea leaf or the coffee berry. Observe that I say in the form of a bean. Cocoa as supplied for use in the preparation of the beverage generally has been "banted" severely. Indeed, I may as well say at once, as later, that supposing you determined to live upon cocoa solely, you would need daily about nine gallons of the beverage of fair average quality, and I fancy that after a very short life you would kill yourself by living ! Of course, if you prepare your cocoa with milk and add sugar to it, or if you use water and add cream and sugar, you make of the beverage a very nourishing drink, but the heightened food value is due to the sugar and cream or milk, and not to the cocoa. Chocolate is for this reason of much greater food value than cocoa. Half-a-gallon of good chocolate, prepared with milk ($\frac{1}{4}$ lb. to a pint) would supply all the

energy and a large portion of the reparative material needed in a day. "Chocolate" consists of ground cocoa mixed with sugar, often also with some starch, such as arrowroot, and various flavouring agents, *e.g.*, vanilla. (By the way, the thick cocoas usually owe their glutinous properties to added starches—wheat flour, arrowroot, etc.) Good chocolate should melt away easily in the mouth, and ought not to have upon it any moist "bloom." The white portion of "chocolate cream" is made up usually of melted cane sugar and glucose (honey) flavoured. The foregoing account of its composition should suffice to forbid indulgence in chocolate nibbling and chocolate "cream" sucking to all the efficiently nourished. These dyspepsia-producing practices become rankly poisonous to the idle and the over-nourished, particularly to that large and increasing body, the too-well-to-do "gouty." The compensations exacted by nature for laziness in all other ways, combined with activity in feeding, are very comforting to the observant philosopher, as well as encouraging to the practical moralist. It is becoming, with the idle rich, a case not of "he that will not work, neither shall he eat," but of, "neither shall he digest"!

Cocoa seems to have obtained a vogue in this country earlier than either tea or coffee. It is said to have been introduced into Europe by Columbus. As early as Charles II.'s time chocolate was a fashionable beverage, probably because it was very

expensive. It is only, however, of late years that cocoa has attained to anything like popular favour; and that it has achieved chiefly through the pertinacity with which it has been pushed by its preparers, aided, it is true, by the traditional improvidence of doctors. The British public, being chronically thirsty, can be and is induced, by sheer puffery, to swallow much less wholesome drinks. The said British public being dyspeptic too, is always ready to try any dietetic beverage which is proclaimed to be "grateful, comforting," especially if it also be declared to be "nourishing." It is a fittingly curious subject for philosophical speculation to determine why the manufacture of cocoas should have possessed such attractiveness for Quakers.

Cocoa, as we know it, is obtained from the bulgy and stumpy-cucumber-like fruit of a tree known as the *Theobroma Cacao*. Embedded in the pulp of this fruit are numbers of seeds, each consisting of two opposed, bean-shaped halves, enclosed in a husk; and it is from these latter that our cocoa is prepared. The seeds are separated from the pulp and "sweated" in heaps for several days. They are then roasted, which makes them brittle and so loosens the husk that, on pressure being applied, the two halves of each seed are liberated, and are known thenceforth as "cocoa nibs." These nibs are sold as such, or are crushed between *hot* rollers, which, by melting their fat, reduce them to a viscous condition. Much of the fat is removed

by pressure and sold as cocoa-butter, and the cocoa residue is run into moulds and there is formed into what are known as "slabs." For conversion into "cocoa essence," or what is known as "pure soluble cocoa," these slabs are ground into extremely fine powder. It should be noted here, that "soluble" cocoa is a commercial sham : there being no such thing as a really soluble cocoa. The great desideratum of the cocoa maker is to produce a completely soluble cocoa ; the man who can do this is assured of even a more "huguous" fortune than now appears intemperately to reward the purveyors of "soluble cocoas." All that is done is to powder up the "slab" cocoa so finely that, when mixed with water, it remains easily in a state of suspension—something very different from positive solution. To aid in this suspension, various methods of doctoring cocoa are adopted. The addition of some alkali is a favourite device, especially with Dutch manufacturers. Alkalies aid suspension by emulsifying the fat (cocoa-butter) by turning portions of it into soluble soaps, what is known as "saponifying" a fat. They also soften the fibre of the cocoa, and so enable it to form a sort of pulp with the water. There are also methods of increasing the solubility of cocoa by the aid of heat. The addition of alkali to an article of food, proffered for day after day consumption, is objected to by some as likely to be injurious to health ; and to the feeble, the anæmic, and generally the underblooded, it doubtless is so ;

but there is no doubt that the alkalinised cocoas are most acceptable to people subject to "acidity of the stomach," and generally to the full and over-blooded. Such cocoas become, in short, more or less agreeable vehicles for the therapeutical "exhibition" of soda and potash salts in the guise of "grateful, comforting" beverages. A lay purchaser can determine for himself whether his cocoa have been doctored with alkali, by adding to the beverage a pinch of bicarbonate of soda, and noting the amount of effervescence which results. All free acid should be neutralised before cocoa is imbibed by the "gouty." The stomachs of such are little better than bags of rennet; nay, their very blood is but a sort of thickened vinegar! The fine particles of cocoa, which are held in suspension, appear with many to interfere with digestion; possibly by clogging mechanically the free access of gastric juice from the glands. Then, too, the large amount of fat which it contains (30 per cent. in even the finer varieties) makes cocoa irritating to many stomachs—cocoa-butter being a fat difficult to digest and liable to become "rancid" in the human dietetic laboratory, from the formation of fatty acids, etc. Much cocoa taken at a time, like much tea or coffee (or even water, for that matter!) upsets digestion. If, however, a person wish to partake of a bland and nourishing, mild caffeinic stimulant, apart from meals, a cupful of good cocoa, or of fine chocolate, is the safest to select. He

should add no additional sugar to that already combined with the cocoa in the chocolate, but should add, if "gouty," or prone to "acidity," a little bicarbonate of soda; or if the chocolate be unflavoured, a soda-mint pellet. The drink is something too much of a food to require biscuits, cake, bread and butter, etc., with it, except by the young and growing, and, in adult life, by the very active.

Owing to the relatively smaller amounts of caffeinic alkaloid which they contain, cocoas act less powerfully upon the nervous system than do teas and coffees. Hence, their greater suitability for our neurotic, hypersensitive, and "over-strung" fellow creatures. A much-advertised preparation exerts a more powerful influence upon the nervous system than do the pure, simple cocoas. This influence it owes chiefly to the presence in it of *kola*. Kola contains a considerable quantity of caffeine as well as a glucoside (kola-red),* and it is to these that its stimulant effects upon the brain, etc., are to be attributed. The regular use of a drug, not always certain in its action, which is accredited with remarkable sustaining powers, and is proclaimed to have the property of abolishing the sense of fatigue, becomes improvident if you do not take steps to investigate and to mitigate, if you cannot remove altogether, the causes of the sense of fatigue.

* *British Medical Journal*, June, 1898.

The ritual of temperance in the consumption of caffeinic stimulants is: not to consume them as a general rule apart from meals; to take them rather toward the end than at the commencement of meals; and to reduce to the lowest proportions the tannin and other undesirable adjuncts with which the caffeine is associated commonly, *e.g.*, in tea; to give them to the young and growing in the form of cocoa rather than in the guise of coffee and tea. For the grown it is a moot point whether it be not better to consume one's caffeine separately, as caffeine simply, to be honest with ourselves, in place of humbugging ourselves over coffee and tea. Of course, if we find that consuming our caffeinic stimulants in the form of coffee and tea, despite the tannin, etc., adds for us to the agreeableness of living, and does not make of us less efficient racial agents, why there is no sort of moral justification for interference with us by temperance reformers, etc. My own practice is to take my caffeinic stimulant apart from coffee, cocoa, or tea, and I find myself the better for the regimen. I hesitate, however, to recommend the direct use of the drug to others. As is the case with alcohol, there is so often set up a tendency to exceed the truly temperate mean. I can, and do, limit my consumption of caffeine to one grain, in the form of a citrate, dissolved in hot water, or soda-water, at a meal. (In an ordinary cupful of tea there is usually from three-quarters to one-and-a-quarter grains of caffeine). I

am not sure that my restraint would characterize my readers. Judging, however, from the digestion devastating intemperance which I see going on around me, in the drinking of tea, to get, one must suppose, and however improvidently, the requisite stimulus from the contained caffeine, I am disposed to believe that even tea toppers might be reformed, if they were confined to a colourless, slightly-bitter flavoured solution of caffeine, and if its consumption, like that of alcohol (except when ordered by a doctor), were restricted rigidly to meals. For it must be remembered that caffeine in excess has influences upon the nervous, the digestive, and even the circulatory systems, which are deplorable always and dangerous often. Tremors, giddiness, palpitation, and atony penalise to greater or lesser degrees the trespasser beyond the temperate mean. Too frequent stimulation of the nervous system with caffeine like over-frequent flicking with alcohol upon the heart, but tires it out the sooner. A caffeine "habit" may be established just as the morphia and the alcohol habits are, and in the same type of person, *i.e.*, the man or woman with ill-balanced brain, and therefore instability of will. It also is painfully demoralising. Still, for my single self, I had rather have a person a caffeinic debauchee openly and consciously, than secretly, if unconsciously, as an intemperate consumer of tea, and, as occurs occasionally, an obstreperous denouncer of the drinkers of alcohol into the bargain.

For tea-dramming, as compared with pure caffeine drugging, involves tannic acid, etc., drugging as well.

P.S.—The gouty should bear in mind the fact that caffeine is affirmed to be a source of uric acid by most competent authorities; but, granting that, there is this to be said for its temperate consumption (in dilute solution) by the gouty: (*a*) that such consumption secures to them what they commonly stand in need of—hot water; and (*b*) that the stimulating effect of caffeine upon the renal organs lends such aid in the removal of waste products as may compensate for the slight amount of uric acid which can be formed from so small a quantity as one grain of caffeine. The addition of a few grains of citrate of lithia (say half of a five-grain effervescing tablet) to a cupful of hot water, in which one grain of citrate of caffeine has been dissolved, should furnish to the gouty a reasonably innocuous caffeinic stimulant; and lithia so taken, certainly seems to be shorn of the depressing influence attributed to it.

NOTE.—On *p.* 31, bottom line, for “*xanthine*” read “*pectin*.”



(c) AQUEOUS STIMULANTS.

UNDER this heading we have briefly to consider potable waters—hard, soft, still, and “natural aërated”; also waters artificially heated and waters aërated by machinery. Artificially aërated waters commonly are made to hold in solution various gaseous and medicinal products, *e.g.*, carbonic acid gas, soda, potash, and lithia salts, piperizine, lysidine, etc. The fluid confections known as “gingerbeer” and “lemonade,” etc., although they may, and generally do, contain a little alcohol—two per cent. is the limit permitted by the Inland Revenue authorities—ought to be classified separately as sugary stimulants. All of these drinks, once they have been swallowed, “are as water spilt upon the ground, which cannot be gathered up again.” No, not even if a stomach

pump be applied promptly. None the less there seems to be little doubt that the water, *per se*, is not absorbed directly from the stomach.* Such evidence as we possess tends to prove that the bulk of a drink of water may remain "swilkering about" in the stomach for half-an-hour or longer. Under average normal conditions it escapes in driblets; its exit from the stomach being controlled by a contractile muscular ring known as the "pylorus," which acts as a door, and shuts off or permits access to the entrails according as the said pylorus becomes or remains constricted or dilated. Thus it comes about that a drink of water is virtually imprisoned in the muscular bag we call the stomach—if the pylorus remain constricted with obduracy. This muscular bag, by the way, has two contractile orifices—one known as the "æso-phagus," where it joins the gullet, and the pylorus opening into the intestines.

In the ordinary course of things the pylorus relaxes more or less generously, and permits water (and food products) to pass onwards in gushes or driblets. If the foods and fluids imprisoned in the stomach cannot escape from it very considerable pain results. Under such conditions the stomach keeps on wriggling its contents towards the pylorus to get rid of such of them, including water, as are not fitted for digestion or absorption within it. Sipping hot water commonly has the effect of both increasing the force of the stomachic contractions,

* *Food and the Principles of Dietetics*, p. 291.

and of causing the pylorus to dilate, and so to permit of the passage of water and food, etc. This, in brief, is the rationale of the relief from "gastralgia," which often is experienced after sipping a cupful of hot fluid.

To secure the fullest stimulant effect of water, it should be sipped in preference to being swallowed in gulps. In the sipping, however, you should avoid sucking in air. You cannot sip anything without raising the force and frequency of the pulse, and whenever blood pressure is heightened (in reasonable degree), a feeling of physical exhilaration is experienced. The lay reader can prove this effect of repeated sipping by keeping the finger of his one hand pressed lightly upon the pulse of the other at the wrist (radial artery), whilst someone administers to him, in teaspoonfuls, a cupful of hot or cold water or other fluid. The spoonfuls of water swallowed should succeed each other with only such intermission as is caused by the refilling of the spoon. The experimenter will find objectively, and feel subjectively, the pressure of the blood within his artery heighten, the force of the beat increase, and its rate become more rapid. If he do not, he should consult a sage physician!

It is, however, the parched with natural thirst, or those exhausted with the drouth of fever, who most truthfully can testify of a cup of water, that its "draught of cool refreshment may give a shock of pleasure to the frame, more exquisite

than when Nectarian juice renews the life of joy in happiest hours." Under such circumstances, I doubt if water remain in the stomach for the length of time Dr. Hutchison tells us it may do in normal health. Part of the "shock of pleasure" is due, doubtless, to the comforting coldness of the fluid; but, judging from one's own subjective sensations, it is difficult to believe that access to the main currents of the blood is not obtained for some portion of "the cool refreshment," and obtained, too, without appreciable delay. So far as my observations of the practices of non-human animals justify me in making inferences from their habits, I note that when both hungry and thirsty, say after a journey, horses will drink before they begin to eat, if they are afforded a choice. Now, to take the case of a horse under such circumstances. If water remain a long time in the stomach, the mere presence of such a bulk of fluid as a horse will swallow must constitute a serious hindrance to the digestion of solids. I make, therefore, this inference: that in conditions of real systemic thirstiness, the pylorus opens and permits of the free, immediate, and practically unimpeded passage of water into the intestine, where we know that absorption of it does take place. I do not believe that any practice which is instinctive is likely to be injurious, however opposed to laboratory experiment it may be. Instinct, it is to be remembered, represents the accumulated experience

of numberless ancestral experimenters ; not, it is true, in laboratories, but upon a less cribbed, cabined, and confined a stage ; upon, in short, the open plain of nature. In laboratory experiments the absence or perversion of what I will call the healthy mind, the normal psychological factor in the experimentee, vitiates, for my single self, the inductions drawn from the experiment. The said inductions are true enough of similar organisms under similar laboratory conditions, doubtless, but applied to free, untrammelled creatures, are only too likely to lead to "fine, confused" thinking ! How tremendous the influence of the mind is over the processes of digestion we all know. Mental disturbance, for instance, not only may inhibit appetite, but also may bring on acute dyspepsia, and even ejection of food from the stomach. Whence it follows that sage folk will endeavour to feed in cheerful company. I can testify that it is "not good for man to live alone" at meal times ; or, I believe, for the matter of that, for woman either ; not only lest the attention be absorbed by the contents of the cup and the platter, but also lest the boredom and dreariness of the business lead one intemperately to hurry one's feeding, and so quickly to get it over. *The Lancet*, quite rightly, has drawn attention to the form of dyspepsia which commonly supervenes upon solitary feeding ; only it dubbed this, unphilosophically enough, "bachelors' dyspepsia." It

were more correct to entitle it, "eremites' dyspepsia," as it is by no means unisexual. An even less endurable type of dyspepsia may, however, be the result of taking one's food to an accompaniment of jangle.

To revert to water: the circumstance that, under normal conditions, water does not undergo digestion in, or absorption from the stomach directly, but is passed on to the intestines either in driblets or gushes, this circumstance is a cogent reason for selecting carefully such water as we ingest. Particularly ought care to be practised when we take water apart from meals. Being then but slightly, if at all, subjected to the baccillicidic action of the gastric juice, any disease germs which it may contain are more likely to be passed on in an active condition, and the said germs almost necessarily will have finer opportunities of being absorbed with the water when it reach the intestines.

A really pure water practically is unobtainable. Distilled water is chemically pure, but insipid. The insipidity can be and is got rid of, and an agreeable "sharpness" substituted for it, by "aërating" the distilled water. This is effected by surcharging the water (under pressure) with what chemists call "carbon dioxide" and write " CO_2 ," and what laymen call "carbonic acid gas." Distilled water judiciously so aërated makes a pleasant drink with an agreeable sub-acid sharpness. Theortically it is

an ideal dietetic drink, but practically it fails to prove so. It is affirmed that the regular consumption of distilled water causes, in time, definitive solution of certain of the tissue elements and so leads to a wasting of the consumer, owing to the asserted solvent action of the water. I confess to obtaining no proof of this effect, albeit, I drank distilled water for a long time, added diluent salts to it, and even had all the tea, coffee, etc., I then drank, prepared with it. I discontinued its use because I found my taste turning instinctively from it. Probably the distilled water had dissolved such soluble waste material as my system was the better for being freed from, and then the farther consumption of it became distasteful, and that instinctive distaste, for me, was a sufficient reason for discontinuing its use. Had I persisted with its use, I might have experienced harmful effects. But, as I have already said, great importance is to be attached to real, instinctive likings and distastes in the matter of eating and drinking. A rooted distrust of mere, superficial fancies is the necessary corrective corollary.

Both naturally and artificially aërated waters are now drank largely, and the proportionate consumption of them tends to increase. They form admirable vehicles for the dietetic imbibition of various solvents, chiefly of the alkaline type. Apollinaris, Giesehübler, Narzán, and St. Galmier are fair samples of the naturally aërated waters ;

soda, potash, lithia, and seltzer of the artificially aërated waters. Their pungent taste is due to the carbonic acid gas they contain ; and they owe their sparkle to its liberation in bubblets. Their differential flavours depend upon the “salts” held in solution. Artificially aërated waters commonly are surcharged with carbonic acid gas too highly. An Act of Parliament could and, I think, should limit the proportion of the gas which may be forced into any fluid intended for human consumption. When we realise that the health of our people must be our first law, or rather the purport of our laws—a regulation of the amount of carbonic acid gas which shall be proffered to the people in the guise of “soda water,” etc., doubtless will be promulgated. Incidentally, fewer accidents in bottling, etc., may be expected in the manufacture. Lead fittings of any kind should of course be prevented from coming into contact with the fluid, particularly where distilled water is the matrix of the beverage. Carbonic acid gas, in excess, is, and acts as a depressant both to the heart and the respiration. The mere bulk of the gas becomes an oppression, and needless labour is thrown upon the lungs to get rid of it. Persistent overdosing with it tends to induce a general debility—in great excess it is devitalising. On the other hand, there is this to be said in favour of the artificial aëration of water:—That the presence of a small amount of carbonic acid gas acts as a stimulant to the gastric mucous

membranes, and so, by causing an increased flow of the gastric juice, tends to aid digestion. Also there is reason to believe that when aërated water is taken as part of a meal, that then the liberation of its gas within the stomach tends, mechanically, to separate the particles of solid food contained in that muscular "hold-all," and so to favour the freer access to these of the digestive fluids and ferments. A large amount of carbonic acid gas acts as an irritant ; it also distends the stomach indecorously, and gives rise to discomfort, cavernous eructations, etc., and even to impeded action of the heart, and to diminished breathing from the mechanical pressure upon heart, lungs, etc.

The abdominal cavity is not of limitless extent, and if you blow out the stomach until it is a sort of balloon, pressure upon the other viscera must result. Pressure upon the heart is always dangerous, and upon an enfeebled one may be fatal. Indeed, there is little doubt that a definite amount of heart trouble is due to stomachic pressure ; such pressure as results, for instance, from the mechanical distension due to heavy suppers, or from the chronic flatulence which results from the intemperate tanning of the stomach with tea.

The coldness of aërated drinks, swallowed in bulk, tends with many to check digestion, and especially is this the case with the "gouty." Their gastric mucous membranes are usually in as chronically congested a condition as are those of the

intemperate tea tipplers. This state of affairs leads many of the goutily-inclined to add whisky or other alcoholic stimulant to their aërated waters "to take the chill off," and so, if they be not eminently judicious, to open up the prospect of establishing alcoholic dyspepsia as well. Only those drinkers of whisky, etc., are eminently judicious who invariably make use of a measure glass, and so regulate their allowance with scrupulous exactness.

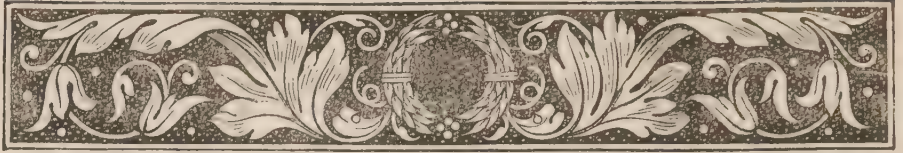
On the whole, the best time to drink water in bulk is toward night, and this holds true, whether the water be or be not aërated. People can go, and if shrewd do go, through the day very well with little or no fluid apart from the quantity they consume with their meals. But practically everybody need to supply his or her system with water for a good internal "wash-out" towards night. Remember that waste materials then most do congregate in the body when, as a rule, all physical activity is over. In well-to-do idle people this specially is the case. A late dinner is a prolific source of waste matter, especially if it follow a substantial luncheon, with more often than not a sandwich tea or other injudicious intervener. Gingerbeer, lemonade, etc., contain considerable amounts of sugar, combined probably with some acid flavouring. On account of this sugar, associated as it usually is with acids, such drinks are fraught with risks for the "gouty," and generally for all the over-nourished or underflushed—with water

be it understood. It is for the Chancellor of the Exchequer to show cause why, artificially and naturally, aërated waters should not be taxed. Our alcoholic and caffeinic drinks are taxed, and it is not easy for the truly just to assent to our aërated aqueous ones going free. As the injudicious and intemperate consumption of carbonic acid gas is the danger to be guarded against, primarily, in the use of aërated waters, a duty levied upon and varying with the proportion of this gaseous drug they may contain would constitute a valuable and profitable protective of the public health.

Persistent intemperance in water drinking, whatever the sort of water, leads to atony of the digestion, flabbiness, and debility—nay, to a possible bagging of the tissues, a making of oneself into a sort of boggy sponge! The ritual of temperance in the drinking of water is to drink it hot, cold, or aërated, as a rule, only with meals, and invariably at other times only when thirsty; and to accustom oneself only to feel thirsty toward the later stages of the day. A cupful of choice hot water before or upon getting up in the morning is permissible and often beneficial, especially to the “gouty.”

N.B.—For ordinary healthy people a moderately “hard” water is the most acceptable. In winter, and by dyspeptics, it may be taken hotted choicely. As a vehicle for the conveyance of medicinal agents for dietetic purposes, viewed therapeutically, distilled water (aërated) is best. For washing in, and for

ablutory purposes generally, a "soft" water is most economical in its consumption of soap, and most comforting to the feel. A gouty or a dyspeptic person probably will be prudent to abstain from drinking overmuch markedly hard water: hardness depending usually upon the amount of lime salts held in solution.



STATE HYGIENE*

AND A

RATIONALE IN NATIONAL HEALTHINESS.

BY "State Hygiene" I mean not only such parliamentary and departmental regulations as have been, and are put forward, from time to time, by the Governments of the day, with the ostensible purpose of promoting our national healthiness; but also such statutory and cognate duties as may be undertaken by corporations, county, district, and even parish councils—by, in short, all sanitary authorities. I use, of course, the definition "sanitary authorities" with the customary and conventional meaning, and without prejudice, as the lawyers say.

* 1900.

Hygiene being the system employed to attain to health, the object, a rationale in national healthiness should be a reasoned-out set of principles of administrative action for the guidance of our sanitary authorities. Such a rationale is just now far to seek, and we can consider at once the scant machinery actually provided alike by the State, as the supreme sanitary authority, and by the subordinate local sanitary authorities for producing that most important of all political assets—a healthy population.

And first as to the State. Our system of government provides no independent department charged with the care, promotion, and general oversight and preservation of the national health. Incredible as the statement may seem, it states the fact—what is provided being a subordinate department in the offices of the Local Government Board. The President of that Board is appointed to the office for reasons which can, in no sense, be deemed of hygienic import. A parliamentary secretary represents the same Board as well. His appointment also is given for party services rendered previously. It requires a vigorous political imagination to see, in these arrangements, anything approaching to a sanitary rationale.

The medical sub-department of the Local Government Board is manned by very capable officers who might be able now to do more useful service to the State, even in their strictly subordinate

capacity, if they were less trammelled with red tape. In red tape they are enwrapped and swaddled like Egyptian mummies, and apparently they alone are unaware of this. It is the fact that by intrepid hygienists the Local Government Board is spoken of as "The Sanitary Yamen," and its officers as the State medical mandarins—such is the Chinese adherence to custom and precedent, the utter lack of initiative which characterizes the customary proceedings. But for this, the charitable blame the management rather than the men; the system, not the servitors.

The personnel of the sanitary sub-department is made up of a principal and senior-assistant medical officers, and some dozen or more inspectors. The conditions under which these gentlemen are appointed are as capable of amendment as are the precedents they follow in discharging their duties. Far too much of their time is taken up with clerical work. Practically they are pieces of official mechanism engaged in the production of reports. What becomes of these reports partakes pretty much of the nature of a conundrum. The ordinary procedure of the sanitary sub-department is very much as follows. Let it be understood that I am not blaming officials, but the system. The usual course is this: some sanitary authority wishes, we will say, to purchase a piece of land, and to erect thereon a hospital in which to treat smallpox. Being short of ready money, and disinclined to

throw the whole cost upon the current rate, the sanitary authority applies to the Local Government Board for leave to raise a loan to defray the expenses. The Board acknowledges the receipt of this request, and in the course of, it may be, weeks sends word that upon such and such a date, again usually some weeks ahead, one of its inspectors will hold a local Inquiry and report to the Board upon the project. I should like to say here, parenthetically, that in requiring separated hospitals for the treatment of smallpox the Local Government Board has rendered to the State very sensible service. Well, in dilatory course (considering that all contracts, etc., have to be kept in a state of incompleteness) the inspector appears and holds the inquiry. The actual proceedings, like the preliminaries to them, are usually of a leisurely character. For example, at such inquiries as I have attended, no inspector could write shorthand, and has, in consequence, taken his interminable notes in long. If there were a business intellect controlling the work, either every inspector would have to equip himself with a knowledge of shorthand, or a shorthand clerk would be an indispensable adjunct to every inquiry. The cost of the services of a shorthand reporter might be borne, very properly, by the local authority and the Local Government Board, in equal proportions—the understanding being that a verbatim report should be furnished to each of these bodies. But to proceed. The

inspector learns from the Town Clerk, the Medical Officer of Health, and the Surveyor of the local authority the reasons which lead that body to procure a site for a smallpox hospital, and the special features and advantages of the suggested site. All which evidence could have been transmitted to the Board, together with plans, etc., weeks, perhaps months, earlier, and in writing, the Board being enamoured of reports upon every conceivable topic, or, which were much more business like, have been conveyed orally at an interview arranged in the Board's offices in London. After hearing these officials, the inspector asks if there are any opponents to the application who wish to be heard, and forthwith hears any and all sorts of objectors. In the town I know best certain cranks bring forward grievances about the town lands upon these occasions; and certain other notoriety hunters air their views upon sanitation, etc., and perorate ineffectually about the burden of the rates. There is commonly no serious opposition. Any one of importance, such as a large landowner, or a neighbouring sanitary authority, particularly if it be proposed to erect the projected hospital outside the boundaries of the applying authority, is, of course, placated beforehand. What the British public is treated to being a little comedy wherewith the paralysing solemnity of a Local Government Board Inquiry is desecrated—at the public charges.

Lunch is partaken of as part of the proceedings, and is usually furnished forth by an official of the local body which is the applicant for the loan. The inspector is invited to become the official's guest—and the cost of the meal is added by the ostensible host to his official disbursements. An inspection of the actual site for the proposed hospital is made—carriages, etc., being provided by the authority—and after soliciting and obtaining all kinds of information, or the promises of it, the inspector departs after announcing oracularly that "the local authority will be communicated with by the Board, etc." The Board, after weeks of delay—the keeping open of contracts, etc., notwithstanding—the Board at length does communicate with the local authority, and sanctions the loan, subject to recondite red-tapey conditions. Commonly, some more or less red-tapey and harassing requirements are made—requirements which may have been sensible enough in different circumstances, but which the Board having approved once, appears incapable of dispensing with. This is the sphere in which red-tapeism is rampant. It may happen that the inspector sent down has no real first-hand knowledge of, we will say, smallpox hospitals, and of what are the essentials and what the accidents of such institutions. Such an one dares not depart from precedent, and at headquarters precedent is supreme. The Board having made its conditions, leaves their fulfilment to the *bona fides* of the local

authority. It does this without, so far as my observation extends, taking steps to assure itself positively that its stipulations have been complied with, which only adds, if that be possible, to the absurdity of the whole procedure.

Again, it happens occasionally that the Board sends out an inspector to give advice to various sanitary authorities, especially at the time of some scare.

Upon some such occasion, years ago, the town with which I was associated was visited by one of these evangelists of the gospel of official hygiene. A meeting of the Sanitary Committee of the Corporation was called, and the inspector having been seated in the post of honour, at the right-hand of the chairman, was invited "to say a few words." He was an amiable fellow, with no first-hand knowledge of practical sanitation, and of the possibilities, and, what is almost more important, of the limitations of municipal administration. In fact, he had never been Medical Officer of Health, even to a parish. There were shrewd enough men of business present to reckon him up in less than three minutes; and, well, they fooled that man to the top of his bent. After he had prattled on for some three-quarters of an hour the chairman rose, and, in flowery speech, expressed the general indebtedness. The inspector made becoming acknowledgment and then departed, whereupon the chairman—a tough old trader—giving a

comprehensive wink, said, "now, gentlemen, I think we can get to buisness," a suggestion which was received with a chorus of "hear, hear." No farther notice was bestowed upon the inspector and his ineffectual "preachment." He compiled a bladdery report to his Board, in which he set out, in needless detail, the blameless and indefinite recommendations he had made to the Committee; and with that, or rather with the waste-paper basket, the genial farce ended.

From time to time, local outbreaks of disease cause the Board to send an inspector into the affected district to investigate the origin and to report upon the development of the epidemic, and upon the action taken by the local sanitary authority and its officers in connection with it. The inspector is of course expected to aid as well as to criticize the officials. If a man with practical experience, he is welcomed cordially, and consulted gladly. It is only fair to say that much of the best work that is done by, and for, the medical sub-department of the Local Government Board is done under such circumstances. It may be accepted as a substantially accurate description of the hygienic state of affairs, throughout the kingdom, to say that the local sanitary authorities are undermanned. This is true, certainly, of nearly all rural and of many urban sanitary authorities as well. Sanitation progresses with the feebleness characteristic of overtaxed moving-power in normal

times. When disease becomes mildly epidemic there is a break-down and something near akin to retrogression results. Ill-thought-out remedies are applied spasmodically; foolish expedients given play; wasteful expenditure often is incurred wantonly; with, for final effect, most probably, the perennial dislike of, not to say contempt for, official hygiene becoming rooted more deeply than ever in the ratepayer's mind. And why? Simply because, though the unity and continuity of the geographical state is one of the axioms of political thought, the corresponding sense of the incorporate character of the healthiness of the whole community has not penetrated into either the parliamentary, the official, or the average lay mind. Moreover, neither of these types of mind is at all earnest in seeking after certainty of conviction upon the matter. Resolute thinking would mean drastic reformation. Reformation is always troublesome, and generally expensive. Nay, in so far as it trenches upon vested interests, likely to be dangerous. It is so much easier to let things slide, to put one's trust in those all-potent shibboleths,—the phrases by which Englishmen are accustomed and love to be governed. For our purposes the chief of these is the sacrosanct fetish "local self-government." Now, local self-government is an invaluable and indispensable element in the polity of our common state. Bone of our bone and flesh of our flesh, so to speak, it is impossible for us

to think of Britishers as being contented without this field in which to display their innate capacity for management. Or what, to all intents, and for all practical purposes, comes to the same thing: their innate belief in their innate capacity for management.

Only we have not attained to a sane adjustment of the relations which exist, or rather should exist, between the local and central governing bodies, for the adequate protection and promotion of the public health. I am all in favour of continuing to make the people of a locality responsible for the detail work of its sanitary administration. And in proportion with the measure of their responsibility must be their meed of power. Apart from maintaining in vigorous activity a lively interest in their local concerns, the training which is to be obtained in local administrative work, be it on the parish council only, is an invaluable underprop of that most eminent of the practical virtues—compromise. The give and take, the propulsion to adapt local means to local, and more than local, ends, the perpetual endeavours to adjust the claims of conflicting interests, above all, the general honest effort to secure in practice a substantial measure of justice, as between the local community and the individual member of it, all these things are of incalculable benefit to our citizens. The local community needs to be brought into clearer and closer relations with the whole community, only, for

the administrative capacity we possess to become an actual, in place of a potential, tower of strength to the State. In the zeal for developing self-reliance in the individual and its analogue self-government in the local community, our unimaginative legislators have overlooked the claims of the whole country. After all is said that can be said in palliation of their negligence, the healthiness of the whole commonalty of the nation remains yet the most important of the interests to be conserved by our lords and other parliamentary protectors.

In the nineteenth century the individualistic method worked well enough, was indeed essential to the well-being of the unit, and the local community, and was not disastrous to the State. But now a change has come over the spirit even of our dreams. The nations are entering definitely upon the next great stage of that continuous process of adaptation to continually altering surroundings, which we sum up in the word "civilization." What we call collectivism is in the very air. The sense of a common and incorporate unity pervades the whole people. As a notable publicist has put it—we think in communities. At the same time, the international contests, and perhaps one should say inter-racial, are going to be fought upon the individualistic basis; be these contests commercial, naval, or military. The growth of collectivism among us is an unconscious preparation for the coming conditions. It is one more

illustration of that orderly sequence of the humanly unintended which is the dominant characteristic of our worldly progress. In a dumb instinctive way, the man in the street feels that, in the coming inter-racial contests, those peoples who have so adapted themselves to the altering environment, as to be ready to bring all their common and concentrated energies to bear upon the matter at issue, as an individual brings all his faculties, the man in the street has realised instinctively that to these only will victory be given, either upon the seas or in the exchanges.

Now, the most valuable asset of any State is a healthy population. A healthy people means a reasonably good-tempered, active and prosperous race. In the coming inter-racial contests victory will go to the fittest, that is to say, to the healthiest. Of what use is it to number a population by scores of millions, if you have to deduct millions because they are physically degenerate, diseased, unhealthy and mentally feeble. Argument is not needed to make it clear to every thinking person that public health is public wealth, and that the healthiness of our people must be made "the supreme law." To bring this about, it is necessary for the State, as representing the whole people, to exercise a more direct and effective control over all parts of the sanitary administration of the kingdom than hitherto it has done. It should not longer be possible for every sanitary authority substantially to establish

its own standard of communal administration. We ought not to be scandalised by the spectacle of districts which are administered with fair efficiency being endangered by others, and possibly contiguous ones, which are left to run to hygienic ruin. The State must insist upon a certain minimum standard of efficiency being made compulsory in all cases. It may, the minimum once secured, leave local authorities free to attain to any desired maximum. That, in brief, is the remedy for the administrative chaos which enfeebles our State Hygiene. Local self-government has been regarded as an end in itself, and not as a means to an end. This manifold improvidence naturally has led to multiple embarrassment.

It is not the well-being of a special portion of the population, but the welfare of the whole people which should and must dominate our internal administration in all that relates to the health of the nation. This domination can be brought about, this spirit animate the whole administrative machinery, only by enlarging and systematising the control of the central over the local authorities. It is in this way only that diversity in authorities can be combined with unity in policy. One of the first steps towards this is to codify the laws relating to sanitation, and to change their wording from the conditional into the imperative mood. Where a local authority now finds "may" it will then have to accommodate itself to "must." Another step is

to make it a categorical imperative to the central authority that it shall compel a backward and lagging local authority to come into line with the rest of the country—literally to make it furnish forth the minimum. If the need arise, and in order to secure efficiency, the central authority must supersede a neglectful local authority altogether, and charge all costs upon the discredited district ruthlessly. To give additional interest in, and to expedite the progress of our national sanitation, grants from the Exchequer should be awarded to such local authorities as maintain conspicuous efficiency in the hygienic management of their districts. The friendly rivalry among local authorities to secure these grants will, in a very few years, change the administrative aspect of the land. In place of apathy, and, too often, interested opposition, we may look to find local pride strengthened by rate-saving buttresses.

How the minimum standard policy will work in practice, we may make legitimate inferences from the organization of the police, and from our arrangement for promoting elementary education. In each case the State requires that a certain minimum standard of efficiency shall be reached. It tests the progress made by examination and inspection, and withholds or gives the grant accordingly. Now, just as the nation says implicitly that it is to our common benefit and vital to our inter-racial prospects that every one of our people

shall be able to read, write, and cast up figures (and every child *ought* to be taught how to protect and promote his own and the national health as well); and to secure these advantages, it goes on, we will ourselves provide this minimum amount of education from the public purse—and insist upon every child obtaining it—but leaves the way open to the attainment of any desired maximum through local or personal expenditure; so, in the matter of State Hygiene, the nation must affirm explicitly that the healthiness of the people being its primary asset, this shall be protected and promoted at any cost. And that as a first step towards securing a healthy population, certain minimal standards of purity in potable waters, and in edible foods, shall be maintained throughout the kingdom; and concurrently, certain minimal standards of house and lodging-house accommodation, of sanitary appliances, of medical aid, of hospital and fever hospital accommodation, shall be provided by sanitary authorities throughout the kingdom. And that it will insist upon these minima being provided; and award grants from the public Exchequer to such local authorities as are found to be providing these minima most effectively. It is to be noted that it is the minima which the State is to hold itself entitled to insist upon. To that extent the local authority will be subject to statutory compulsion. But the way will be left open for the attainment of any locally-desired standard in excess of the

statutory minima. Advances upon the statutory requirements to receive benign encouragement from the State. For in this way, by actual experiment and by the experience so gained, the next general advance in the requirements of the statutory minima, doubtless, will be determined. It being but reasonable to expect that a statutory minimum, adapted to the material and social conditions of one period, will, very probably, be held to be insufficient for another, a decade, or generation later. It is the very sensible practice of Britishers to guide themselves by experience. If the experience gained by go-a-head sanitary authorities warrants a general advance in the standard of statutory hygiene, current at any time, then the bottom will be knocked out of all effective opposition.

The rationale of awarding grants from the Exchequer to local authorities, the efficacy of whose sanitary administration has been conceded, is to be found in the fact, that national healthiness is a national interest, is, in fact, our primary interest. The health of the whole community is enfeebled and endangered by the lessened healthiness or unhealthiness of any portion of it. Per contra, the general healthiness of the nation is strengthened and heightened by the exceptional healthiness of any section of it. Consequently, the local authority which not only complies with the requirements of the statutory minimum in furtherance of State Hygiene, but also goes beyond it, will merit being

rewarded by the State for its efforts to heighten the standard of national healthiness. Moreover, we have only to consider the admirable condition into which the provincial police forces of this country have been brought by this method of requiring and rewarding the attainment of a certain standard of efficiency, to take heart of grace over the prospects for our national sanitary forces.

The central controlling machinery will have to be represented by State Medical Inspectors, similar to the police inspectors. It will also be the duty of the medical inspectors to make tours of inspection through all the sanitary districts of the kingdom. I have said already that much of their best work is even now done by the Local Government Board Inspectors, when despatched to some sanitary district or districts. This is a service which wants to be both systematised and developed. In this, as in all inspectorial work, everything depends upon the good sense and experience of the inspector. Mere ability is of relatively little importance; it will not do, for example, to send as inspector, to inquire into the cause of the outbreak, and of the continuance of diphtheria in a country district, a doctor who has had no practical experience of rural sanitary administration. He will be as ineffective as was a medical inspector who was sent into a country district known to me. In this district, diphtheria had then been prevalent for more than four months. Well, this belated inspector

arrived, stayed about forty hours, and then went off somewhere and wrote a report. The upshot of which report was the obviously truthful confession that he could not satisfy himself as to the origin, etc., of the epidemic; which lame and impotent result is not surprising when you remember that he only appeared in the district four months after the outbreak of the diphtheria, and then stayed in it less than forty-eight hours. His recommendations were such as might have been expected from a prophet of the obvious. A local sanitary authority is helped little, and the State is served, but poorly, by a report of that sort, issued, by the way, weeks after the inspector's visit. The meaning may have been excellent, but the method was not business-like.

In the past, too little attention has been paid to the necessity of appointing, as inspectors, chiefly if not solely, men familiar with administrative sanitary work, urban or rural. If the Local Government Board wishes its inspectors to be treated seriously by public bodies, and to have the recommendations proffered by these inspectors also considered seriously, it must send out men capable of taking a real grip of the business to be handled. Bacteriologists, etc., are valuable enough in laboratories, and the Local Government Board ought to be able, at any time, to call in the services of some of the best of them. But no mere laboratory or Metropolitan-Asylums-Board-Fever-Hospital man will be able to

hide for five minutes his want of first-hand knowledge and experience of practical administrative work from the shrewder members of any Board he may come into contact with. Upon matters which the lay members of a Board understand, these gentlemen are apt to think lightly of the recommendations of a departmental "expert" (something, by the way, quite *sui generis*) who has not acquired his knowledge by actual experience, as they themselves have. In short, while he misleads himself with information, they guide themselves by knowledge. In the capacity to differentiate between information and knowledge lies the essence of what we call sagacity in council. What is needed is not only more peripatetic inspectors, but also more practically capable inspectors. Men with knowledge of the work they are supposed to inspect, in place of information about it. There ought to be regulations affecting the appointment of inspectors, to the effect that every such officer must have had practical personal experience in sanitary administrative work. It is not saying too much to affirm that many of the Local Government Board Inspectors have been regarded by Medical Officers of Health with a genial toleration. Not as men, and brother doctors,—oh dear, no,—but as having little or no practical experience of public health work. The remedy for the ineffable out-of-touchedness which debilitates the average Local Government Board Inspector may be found in making experience in the work to be supervised a

conditio sine quâ non to appointment. To throw open the widest possible field for selection, the existing age limits ought to be discarded, and the pay heightened. And not experience alone is needed to give weighty authority to an inspector's suggestions, but, in addition, ripened judgment. There is something pathetically humorous in the spectacle which, from time to time, is presented by a professional stripling, who has never been Medical Officer of Health even to a parish, parading the kingdom with the ostensible purpose of advising and supervising men who have grown grey in performing sanitary services to the public. Of course such official fledglings are handled gently and treated kindly. Men with real knowledge of a subject commonly are entertained by, and can afford to be tolerant enough of those who purvey the official "rummage." They know that when it comes to business it is the man acquainted first-hand with fact, and not the genial expositor of theory, whose counsels will prevail. In short, while the State Medical Mandarins, located in Whitehall, have become stuporous from slavish adherence to precedent and paper knowledge, their department needs to be made to "palpitate with actuality." It may be objected, and very properly, then why do you suggest a large increase in the inspectorate? I do not suggest this with the wish to see more decent fellows reduced practically to automata; to have the new men also only become

the servants of "the Board" at the cost of their individuality. (By the way, the reverential awe with which the average inspector refers to "The Board" gives one a fine conception of what can be meant by "bated breath and whispering humbleness.")

The effective way to get good work from any public department is to let plenty of light be shed upon it; to keep it and its doings well within the range of the public eye, and to expose it to a running fire of newspaper and other, but never ungenerous, criticism. This treatment may be disliked by the drones, but will prove a fine stimulant to the workers within it. Now, the first thing to be done with our State Medical Department is to make it a department of the State. It has vegetated too long as a sub-department of a department, and by no means the most influential of the sub-departments of that department. The health of a nation is, after its security, the primary care of those responsible for the conservation of its interests; that is to say, it ought to be. Even the security of a nation can be made safe only if there be healthy citizens to ensure it. The business needs no belabouring. Its importance is so obvious that it should be apparent even to a Member of Parliament. Our people in the past have been so absorbed in the pursuit of individual advantages, that they have given but a desultory and fugitive regard to the national healthiness. They have

given little more attention to the hygienic welfare of their residential district. The subject has seemed to be too vast and too remote for the "practical" man—the man who believes himself to be specially endowed with the faculties needed for dealing with immediate and insulated difficulties. The working philosophy of the practical man has been distinctly individualistic in its scope and tendency. It has not been animated by any adequate conception of the essential one-ness of national healthiness, of the organic unity, the interdependence of all the portions of the hygienic body politic. One consequence of this has been that the local sanitary administration of the kingdom has been conducted upon varying and indisciplined methods, and, not infrequently, by rule of thumb and haphazard.

To correct this state of virtual chaos, and to give coherence, system, policy, and point to the sanitary administration of the kingdom, it is not necessary to create a State Medical Department, standing separate and apart. Provided that there be secured to it a real initiative, and that with definite responsibility there be delegated, the corresponding power, and, in particular, direct representation in Parliament, the precise name and form which may be assumed by the administrative headquarters are not of vital importance. I do not attach the importance many hygienists do, to making the head of the public health service a

Cabinet Minister. I should be well content with a President of a National Board of Health who must be a Member of Parliament. In time, Cabinet rank would no doubt come, if, which I doubt, that would add to legislative efficiency. It would not be, *per se*, likely to lead to administrative capacity. The fact that the official head of the department was in Parliament, and therefore could be heckled personally, would work wonders in bursting the bonds of red tape which cabin and confine the State Medical Sub-department in that museum of ceremonies our "Sanitary Yamen."

In the equipment of a re-organised State Medical Service, in addition to more inspectors with actual experience of practical sanitary work being appointed, some systematised devolution of their duties is requisite. Inspectors should be given districts for a certain term of years, and made to reside within those districts. The State Medical Inspector could then make himself personally acquainted with all the health officers within his district—by regular visitation of and consultations with them. In this way he could both advise and assist them in the work. He would, in addition, gain valuable, because direct, knowledge of the personnel and characteristics of the various "sanitary authorities" within his district, and be able to discount and allow for the idiosyncrasies of their chairmen, clerks, surveyors, etc. His address being known, he would be the recipient of valuable

and other communications, and of complaints and suggestions, both sensible and silly. On the outbreak of any epidemic disease, he could be called for consultation, and would form an effective channel for intercommunication with all localities likely to be affected, as well as with the central department. He would, of course, or rather he should as a matter of course, be provided with an office and clerical assistance. At the end of a couple of years such an inspector would possess a sensible amount of first-hand knowledge about his district, as well as information. It is knowledge, what a man knows himself, and not what he learns from others, which is needed to make our State Medical Inspectors practically effective sanitary officials. As I propose that enterprising sanitary authorities shall be distinguished and encouraged by grants from the Exchequer, it will be of the first importance to have the inspection of their districts, and of their methods of administration, reported upon by a man thoroughly conversant with the conditions under which the public health work has been conducted. A real risk of doing substantial injustice will be run if the result of a single inspection of a district at one particular period of time be made the administrative reason for giving or withholding a grant. It would, in easily conceivable circumstances, be quite possible for a sanitary authority to be awarded a grant which it had not earned really—but this would be

very unlikely to be the case if its all-round work were reviewed with the knowledge obtained by fairly continuous observation.

With the re-organisation of the health department of the central government some alterations in the appointment, tenure of office, and scale of pay, etc., of the local sanitary officials must be associated; but these requirements can be treated most conveniently in a separate paper.*

* *See* Appendix A.



THE HOUSING OF THE POOR.*

THIS is admittedly one of the most pressing social problems of the day. It threatens to develop into a political one as well. In the meantime the nation is deluged with philanthropic talk about the housing of the poor; whilst the poor remain without healthy houses.

To the layman the problem appears, at present, as a matter of public importance obscured needlessly by vague definitions. No clear principle seems to animate the would-be solvers of it; and ill-directed or misdirected philanthropy is a sorry guide to any concerted action. We may note that it has become quite the fashion to speak of this housing of the poor as the "Housing of the Working Classes." Even the Act of Parliament which

* 1901.

is invoked has been entitled "The Housing of the Working Classes Act." Apparently, to the parliamentarian, only those members of the community who labour with their limbs are entitled to be spoken of as "working." Even if we grant that absurdity, we have still to differentiate the poor from the well-to-do limb-labourer. Now, a little inquiry will show us that well-to-do limb-labourers, certainly all skilled artisans, can and do secure the kind of dwelling they desire; but that the limb-labourers below the rank of the skilled artisans commonly would be the better for help in the matter of housing themselves; and that the really poor, those just above as well as those actually in receipt of poor relief, positively need assistance in this matter of housing. It is for these reasons that I speak of the "Housing of the Poor" and not "Housing of the Working Classes," and by "poor" I mean, for present purposes, people below the rank of skilled labourers; or, to adopt a pecuniary standard, families whose total income falls short of £1 a week.

At the Ipswich meeting of the British Medical Association I propounded a principle of action which commended itself to the State Medicine Section as being one likely to render service in the practical solution of this politico-social problem of housing the poor. Stated briefly, this suggestion was a plea for the adoption and provision of a minimum standard of house accommodation for

the poor ; such minimum to be determined by the State, but the actual embodiment of it to be enforced, and, if need arise, to be furnished by the sanitary authority. The way to promote a general correspondence in the quality of the accommodation is to have the minimum determined by the State. Very possibly go-ahead sanitary authorities would exceed this in determining their local standard. The point urged was that nowhere should the minimum be permitted to fall below a certain standard, but that individual sanitary authorities should be free to exceed it. Though its application to the housing problem is possibly novel, this principle of establishing and providing a minimum is not new. For instance, we say that it is to the interest, and conduces to the welfare, of the community for every child to receive a certain minimum amount of education, which minimum we provide, but leave the way open to the attainment of any desired maximum by private expenditure. It is most assuredly equally true that it is to the interest, and will conduce to the welfare, of the community to protect and promote the common health by ensuring to every person a certain minimum amount of air, space, and household comfort: this minimum in our judgment the community should provide; and leave the way open to the attainment of any desired maximum through private expenditure.

The objection commonly urged against such

measures are, speaking broadly, these : that they will involve a serious addition to the already huge local debt ; that they will interfere with private trading, and interfere under conditions fatal to free competition ; that they will lead to an increase in the number of officials, inspectors, etc. ; that they will impose an undue amount of strain in the matter of management upon municipal and other councillors ; and that they will tend to make these councillors—who must go through the process of election—the servants of their tenants, and intensify the demoralisation fostered by touting for votes.

I do not think that these predictions need deter us from grappling with the housing problem upon the principle indicated. It is obvious that the raising of a loan to provide dwellings for the poor will increase the debt of a sanitary authority ; but it should be equally obvious that the community will secure something to set against this in the shape of dwellings, and also—most valuable of all assets—an increase of vigorous humanity. For it is certain, if it be not obvious, that anything which lowers the general standard of healthiness impoverishes the community. Then if it were proposed that a sanitary authority should embark upon a career of house-building practically without limit, there would be point in the objection that such work must seriously affect private trading. But if a sanitary authority be restricted to providing, in the matter of house accommodation, the

minimum which it will tolerate within its district, a stimulus will be given to private efforts to attract the class of people who will wish to secure house accommodation of a character above the minimum. The fear of an army of officials is bogeyism pure and simple: fewer, not more, inspectors should be needed when healthy dwellings have been substituted for unhealthy ones. The predicted "intolerable strain" upon the time and managing capacity of the average councillor can only make those smile who are acquainted with the actual working of administrative machinery. The real work is and will continue to be done by the officials. An administrative officer is fortunate if he find a chairman and a vice-chairman of a committee he deals with ready and willing to gain a thorough knowledge and understanding of the business to be handled. The responsible official is much more likely to be subjected to an "intolerable strain" in trying to prevent mischief being done by irreflective councillors. Principles of action can and should be determined by a council or committee, but administrative detail must be left to the official; unless the Fabian policy of paying councillors be adopted; and even then the life of neither the amateur nor of the expert official will be a happy one, though the "intolerable strain" may be lessened. Exercise of pressure at election times by the tenants of the sanitary authority is very probable. All grades of people, no matter what their social status,

endeavour to promote their class interests, and no doubt the communal tenants will endeavour to secure for themselves the best terms possible. But no wise sanitary authority is likely to crowd all its communal dwellings within one district, and the rate-paying conscience safely may be relied upon to set due limits to the aspirations of the interested.

The great practical advantage to the community of first determining the minimum in the matter of house accommodation which it will either tolerate or be contented with, and then providing it, lies in the circumstances that by so acting the community will interfere least with private trading. Nay, its action should be a spur to the private or company competitor to provide additional accommodation or attractions for the same, or an increased rental. Then, too, the credit of the community being greater than that of any individual member of it, the municipalities and other sanitary authorities should be able to raise money upon easier terms than the speculative builder can; and this advantage should enable corporate bodies to let dwellings at a relatively cheaper rate. In short, they should be able to provide the minimum at the minimum rate.

In dealing with the cognate common lodging-house accommodation, sanitary authorities might also proceed upon the principle of establishing a minimum of healthiness and comfort, and providing it. I know that some Medical Officers

of Health are in favour of a sanitary authority providing all the common lodging-house accommodation needed within its district. They argue, very cogently, that by providing all the common lodging-house accommodation required within its district, a sanitary authority can minimise the cost of administration and inspection, and control more effectually the importation and dissemination of infectious ailments, etc. But for the purpose of minimising the cost of management, a tendency to limit common lodging-houses to large establishments would almost certainly prevail. The crowding of large numbers of persons upon any given site is a policy of which I cannot approve. Besides, if only one or two of such "houses for the homeless" are provided, a tired wayfarer may have to tramp very considerable distances after he has entered a town before he can reach one of these havens of rest. On the other hand, there are some who fail to see any need for a sanitary authority to provide any common lodging-house accommodation. They argue that the Local Government Board Model Bye-laws relating to common lodging-houses practically establish the minimum amount of air, space, sanitary accommodation, separation of the sexes, etc.; adopt these, let your inspectors see that these regulations are complied with, and you can secure a minimum without adventuring into management. The force of this reasoning we may fully admit, and yet not agree either with those who say that

a sanitary authority should provide all the accommodation required, or with those who say that it should provide none. To provide all is to crush out a perfectly legitimate type of catering, and to establish in its place a monopoly. To provide none is to sanction implicitly as a standard of accommodation that provided by the Local Government Board Bye-laws; and that, I do not hesitate to affirm, is not sufficiently conducive to healthiness, as any Local Government Board Inspector can determine for himself by making a practical trial of it, in his own person, for the space of one week. It may be replied that an easy remedy can be found in a heightening of the Local Government Board requirements, and making their adoption compulsory. Government regulations generally lag behind the aspirations of the intelligent; but whilst I should like to see the Model Bye-laws re-modelled, it is only too certain that it will be the wiser policy to leave sanitary authorities free to fix their own minimum, provided that this never be permitted to fall below that commended by the Local Government Board. The way will thus be left open for enterprising sanitary authorities to continue to forge ahead of the Sanitary Department of the Government. In fact, I would apply to sanitary authorities precisely the policy I wish to see sanitary authorities apply to their possible private competitors, viz., establish a standard which they will not be permitted to lower, but will be

encouraged to exceed. At present the standard commended implicitly by the Local Government Board Model Bye-laws, relating to common lodging-houses, is one that is, in the matter of air space, discreditable, if it be not actually detrimental to the body politic.

We may now turn for a brief space to the legal machinery provided for dealing with the housing of the poor. This practically resolves itself into "The Housing of the Working Classes Act, 1890." This Act consolidates and amends certain other Acts of Parliament dealing with the housing problem. Like all other sanitary legislation, it is enfeebled by not being expressed in the imperative mood. Our law-givers are always "letting I dare not wait upon I would" the moment their proposals seem to involve the laying of a hand upon property. Still this Act can be made to render service to social reformers. It is divided into seven parts, the first three of which are those which apply to the problem before us. Part I. relates to Unhealthy Areas; Part II. to Unhealthy Dwellings; and Part III. to Working-class Lodging-houses (Working Classes Act, 1890, Amendment Act). It is with the practical application of the second of these parts that Medical Officers of Health are concerned commonly. The Act confers power, not upon the Medical Officers of Health, but upon the sanitary authorities to appeal to the magistrates to compel the closing of a dwelling which is unfit for

habitation and cannot be made fit for habitation, and to obtain a closing order, and, after tedious proceedings,* to procure its demolition. The Act also enables sanitary authorities to demolish buildings which, by obstructing light and air, cause other dwellings to be unhealthy. It happens, perhaps not infrequently, that a Medical Officer of Health will sign a formal certificate to the effect that such and such a dwelling is in his judgment unfit for habitation. The sanitary authority is represented by a committee of its council, ranging from a dozen to a score in number, who hold, of necessity, varying standards of judgment in sanitary matters. This committee considers the certificate of the Medical Officer of Health, and usually acts upon it, but not always. A committee will sometimes be satisfied if some patching up is effected. It probably would contribute to a more drastic application of the provisions of the Act if the Medical Officer of Health were given increased executive power. To prevent possible abuse of such suggested executive authority, a Medical Officer of Health would have to be made responsible in the courts as well as to his committee for action taken by him in his official capacity.

Under this same Act a sanitary authority can have small groups of unhealthy dwellings pulled down and new buildings erected; large areas can

* The Housing of the Working Classes Act, 1903, shortens these.

also be acquired, the dwellings upon them pulled down, and what is known as an "improvement scheme" carried out. The sanitary authority can also erect dwellings or lodging-houses in districts where they are required. It will be thus seen that it is not so much the machinery as the moving power which is needed. Public opinion must demand, and then Parliament will apply a categorical imperative wherever a direction is now expressed in the conditional mood. Parliament should at the same time secure fixity of tenure to and government control of the appointment, pay, duties, etc., of Health Officers, so that these officials may have every inducement to be fearless. Under Part I. of the 1890 Act it is sometimes possible to condemn insanitary areas, but a Medical Officer of Health will do so very cautiously, because of the cost which the sanitary authority has to incur in purchasing the site, and in providing accommodation for the displaced tenants. Apart from the question of cost, a site which has been covered with habitations, perhaps for centuries, is not one upon which a sanitary authority could be advised to erect new dwellings light-heartedly. Such a site is certain to be saturated with pollution. I suggest that if such an area were bought, it should be converted if possible into an open space, or be utilized for warehouses, and that any new dwelling the sanitary authority proposed to erect should be built upon a hitherto

unoccupied site. Houses which are erected nowadays are less likely to give rise to soil pollution than houses built a generation ago, and *a fortiori* much less likely than those built a century ago. Nowadays every respectable sanitary authority requires each new house to be provided with a "damp course" in its walls, to have concrete placed beneath the floors, and to have abutting upon it paving material impervious to fluids. The drainage must receive official sanction, and attention is given to sanitary appliances; but even now a fireplace in every bedroom is not insisted upon, and a fireplace means a possibility at least of securing some ventilation at all times, as well as of warmth when a fire is lighted. A sanitary authority could also very easily require the panel above the entrance door of every dwelling to be filled in with glass, and made to open inwards. By this simple requirement a very effective method of ventilating could be brought into practice, and some light would be admitted into what is commonly the darkest part of a cottage dwelling—its entrance passage.

To revert, however, to insanitary areas. In dealing with these it seems to me that condemnation of an area should entitle the owners of the property only to secure what they can obtain for the materials of the buildings condemned and the market value of the land, if the sanitary authority choose to buy it. If a dwelling or collection of dwellings be unhealthy, it is surely a wasteful generosity to

give the owner or owners any sort of compensation when the sanitary authority has decided that the community shall be no longer endangered and disgraced by these dwellings. The fact that the site itself will be riddled with pollution should be deemed to render it ill-fitted for the erection of other dwellings without special precautions. It is the experience of most places where considerable areas have been dealt with under Part I. of the 1890 Act, that the houses which are built upon the acquired sites have to be let at rents beyond the means of the class of people which has been displaced. In short, there has occurred a shifting, but not a cure of the over-crowding. Sanitary authorities, in the present state of the law, are only prudent if they confine their action to dealing with, and from time to time closing, individual dwellings—a procedure which involves no compulsory purchase or compensation, and which will, if pursued resolutely and persistently, rid their districts of many, if not all of the dwellings which the Medical Officer of Health certifies to be unfit for human habitation. The certificate of this officer, it has to be remembered, has of itself no executive effect. Whether it shall be acted upon or not is a matter which a committee of the authority has to determine; its enforcement depends upon the magistrates. But all sanitary authorities can compel owners of property in yards and courts efficiently to pave and to drain these, and to provide the inhabitants

with suitable sanitary accommodation. It must not be forgotten that the great repressive influences upon active work by sanitary authorities, in this matter of housing of the poor, are the expenditure involved and the onerous nature of the terms upon which loans for the purpose are at present sanctioned. If loans were granted for a period of seventy-five years, and upon easier terms, the land being regarded as a perpetual asset, and if compulsory purchase of condemned areas and payment of compensation were done away with, we should find the housing of the poor no insoluble problem; and, in my belief, we should find its solution facilitated greatly by dealing with it as we do with elementary education—by adopting a statutory minimum standard and directing our local authorities to insist upon, and, if necessary, to provide this.



THE PUBLIC-HOUSE PROBLEM.*

A SOLUTION of the politico-ethical imbroglio, which for convenience we may call the public-house problem, has become a social necessity; the problem, unsolved, being a source of contention cumulative in its character. Nor is this all: for fanaticism now claims to be a fitting agency to provide the solution and to dictate the terms of it to Parliament; whilst the risks of the problem becoming a more demoralizing tangle of conflicting interests than ever have been added to by the adventuring into the drink traffic of a philanthropy promising to pay not more than 5 per cent. In the meantime there is such general agreement about the mischief wrought by this unsolved drink problem in our body politic, alike to the good temper of the race and to the national morals, that I can proceed to propound a workable solution without prefatory argument. Which solution I affirm can be effected by the employment of

* 1902.

a compound of Licensing Reform and Local Option, novel only in the method of its application.

No reference will be made to grocers' licences; and no reference will be made to the history of the parliamentary efforts which have been made to solve the public-house problem. The record is strewn so thickly with the wreckage of administrations, commissions, reputations, and good intentions, that its recital would only serve to damp our spirits. It will suffice for me to say, that the present Government is fearful of giving effect to the recommendations of its own Commission.

I remind those who, like myself, have faith in the principle of local option, that in attempting to deal with any question which affects the health, the comfort, and the convenience of the general population, the axiom that the whole is greater than its part must never be lost sight of. Though Euclid propounded this truism, local optionists need constantly to be reminded of it. For example, they need to be reminded that while it may be temporarily agreeable to a majority of the inhabitants of Little Pedlington to prohibit the sale of drink within that parish, Little Pedlington is itself a part of a county, and that county again a part of a country; and that it may be, and pretty certainly will be, disagreeable to the rest of the nation to have the comfort and the convenience of the peripatetic members of the population disregarded by the wielders of a probably temporary power in

the parish of Little Pedlington. Little Pedlington will therefore be expected, invited and, if need arise, compelled to furnish its contribution to the conveniences of a communal existence which are provided for the use of the general nation ; and in particular for those members of it who are led by business or pleasure to leave, for a time, their own dwellings. Moreover, in Little Pedlington itself there will be a number of its inhabitants who will be opposed to any arbitrary disregard of the amenities of a communal life, and who will deplore the demoralizing growth of a disinclination to provide a place of rest and a haven of refreshment for tired, hungry, or thirsty wayfarers and their local congeners ; even for those who desire to refresh themselves with alcoholic liquors.

I affirm that a lasting cure for the political curse can be found in a statutory regulation, applicable to the whole kingdom, to the effect, that every parish—*or other agreed upon area*—shall be furnished with one “public-house,” or, as I should prefer to name it, one house of rest and refreshment ; but that whether the given area shall possess more than one such house shall be a matter to be determined by local option. In other words, the State will determine the minimum amount of public-house accommodation which shall be contributed by every agreed-upon area, but the maximum will be determined by local option. By these means every wayfarer will be assured of finding at least one

house of rest, at which he can claim refreshment, in every district. In these ways the State will safeguard the comfort and the convenience of the general population, whilst the local inhabitants will determine what variation (if any) in excess of the statutory minimum will best meet the requirements of any particular locality—subject only to the variation being sanctioned by the licensing authority. I further suggest that Parliament determine the minimum number of hours during which the public-house must, and the maximum during which it may, be open. For instance, Parliament may ordain that every public-house shall be open between the hours of 10 a.m. and 8 p.m., and may be open from 8 a.m. to 10 p.m., or even 12 p.m. Then the little Pedlingtonites will be at liberty to vary the time limits within these periods at either extremity, and to decide by vote that their public-house shall be open say from 8 a.m. to 10 p.m.—subject only to the sanction of the licensing authority being obtained to the variation. Provision to be made of course for safeguarding the claims of resident guests and long-distance travellers. The qualifications which will place a wayfarer in the category of *bonâ-fide* travellers it will be prudent for Parliament to pre-determine.

In ordaining that one house of rest and refreshment shall be provided in every agreed-upon area, Parliament must make provision for this obligation to be discharged directly by the local authority,

if the latter wish to adventure into management. At the same time the said authority must be left free to permit the obligation to be discharged indirectly by and through a publican, or, if that course seem good to the locality, by a firm of brewers, or by a philanthropic association.

In case any parish council or other local authority refuse obdurately to assume its share in this work of social reform, then the county council, or, in the last resort, the State itself, must be empowered to step in and provide a house of refreshment, or to sanction the adaptation of some existing "public" to that purpose. But in such a case the local authority must be deprived of control of any kind over the conduct and management of the house of refreshment. I apprehend that few local authorities will take up so cantankerous an attitude towards the work of temperate reform as will render these draconian measures necessary. The ideal arrangement in rural districts will be for the parish council or other authority both to provide and to manage the local house of refreshment; for this will tend to make the said house partake more of the nature of a club than does the ordinary "public." A club-like character every sage local authority will endeavour to make its house of refreshment assume.

In towns and populous places the same principle (statutory determination of the minimum and local determination of the maximum) can be applied with equal and even greater facility. The town councils

will be the bodies which will determine the number of public-houses which are needed in their respective localities over and above the statutory minimum. In the event of existing licensed houses being suppressed summarily, the local authorities must be empowered also to determine the amount and character of the compensation which may be awarded. Parliament in this particular matter to determine the maximum scale upon which compensation can be given, the local authorities being left otherwise free to award what equity in each case requires.

It is probable that by means of high licences the local authorities will obtain the fund from which to pay compensation for suppressed licences, or at any rate the interest on, and sinking fund money, wherewith to repay any loans they may raise for the purpose. It will happen, and doubtless frequently, that a local authority will award no compensation, and to see that broad and even-handed justice is done, even to publicans, provision must be made for an appeal to a High Court, having power to confirm or alter the local authority's decision, or to remit the case for re-consideration.

It will have been noticed that the local authorities have been represented implicitly as constituting the licensing bodies: and this will, I believe, prove to be the best working arrangement. The town or county councils, as the case may be, sitting in full and open session, must be empowered to grant or refuse licences by vote. I suggest county rather

than parish or even district councils as being less likely to be too meekly amenable to the influence of parochial big-wigs and local caprice.

The supersession of the magistracy altogether as our licensing agency proffers the simplest method of securing, alike to publicans as well as to the public, substantial satisfaction. This can be effected by making town and county councils the licensing authorities within their respective areas. These councils are and will be more truly representative of the populations concerned than any bench of town or county magistrates is or can be. The drink question is one which effects very closely the material and social welfare of the people. It is pre-eminently one in the settlement of which they are entitled to have their wishes respected. Recurring elections provide a ready means of altering the composition of town and county councils as licensing authorities, should they fail to give due effect to local feeling. Whereas, under existing conditions, the composition of the licensing magistracy is a matter over which the affected populations have no effective control. All sorts of men who have been party or municipal servitors, either in purse or person, are, for the towns, nominated to it by the *pro tem* Lord Chancellor; whilst in counties, men who for similar party, politic, or impartial servitorship, and occasionally because they are good sportsmen, or have engaging social qualities, or even for their ability, provided they own land, are

nominated by the, *pro tem*, Lord Lieutenant. All these magistrates are practically irremovable, no matter how far they may diverge from the feeling of the populations whose licensing affairs are entrusted to their discretion. Then, too, if such socially important work as licensing be placed in the hands of town and county councils, it is but reasonable for us to expect that greater interest will be taken in council elections; which again will produce a good class of candidates and so react beneficially upon the discharge of duties, other than licensing, which are or may be committed to the care and control of these councils.

A side issue, which I only touch upon to give my readers assurance that I am not unmindful of it, is the tied-house yoke. This, in practice, presses most hardly upon rural populations. People in out-of-the-way hamlets practically are compelled to drink the productions of certain breweries if they want to drink at all. This is because breweries control the publicans and have them "tied" to the brewery tap. In the towns there is commonly a very considerable amount of competition among the beers which appeal to the palate. If a drinker do not relish "A's Entire," he usually can obtain "B's" or "C's" elsewhere.

The tied-house tyranny could be banished most effectually from rural districts were the local authority to conduct its own house of refreshment and obtain its beer, etc., from whatever source the management

found popular. But in both towns and villages licensing authorities must be empowered to make regulations applicable compulsorily to the granting of licences which will secure freedom of trading to the publican. If a monopoly in any traffic is to be tolerated it should surely be in the control of nothing less than the whole body politic. What we temperate temperance reformers have to do is to better the existing state of things by the application of practicable remedies. The monopoly of the brewery can be broken down effectively in any place by the means indicated. Breweries moreover can share in the advantages accruing from the tapster's liberation—through the stimulus which will be given to their efforts to secure the privilege of supplying the communal public-house.

To revert in conclusion to the main issues upon which there is general agreement as to the need of legislative action—licensing reform in, and local control of, the drink traffic. Any reform in licensing which does not place the practical determination of the licensing authority within the control of the affected populations is not likely to meet with general acceptance, and will not satisfy a widely-felt sense of grievance. The reform advocated in this paper will do that by the very simple expedient of making the municipal and the county councils the licensing authorities within their respective areas. The legitimate claim of a locality to have a voice in determining the number of houses which shall be licensed for the

sale of drink within that locality will be satisfied by the provisions suggested being incorporated in an Act of Parliament, viz., those securing to the locality the right of suggesting how many licensed houses (if any), other than the statutory minimum, shall be established in a locality, or, if already established, continued. The provision of a statutory minimum will place it out of the power of any accidental majority of the parish people not only to deprive arbitrarily their fellow residents, but also to rob the travelling public of an assured place of rest, wherein they can demand reasonable bodily, and even spirituous refreshment; and will also save the general nation the scandal of having the amenities of life within its borders disregarded indecorously. Another excellent, because ethical, influence which will result from the enactment of a statutory minimum of accommodation, in the shape of houses of refreshment, will be the chastening of those would-be autocrats—the total prohibitionists. One need have little doubt that the constant effort of those teetotallers who are dominated, in their own despite, by that demoralizing intellectual agency—fanaticism—will be to turn local option into local prohibition. The exercise of arbitrary power by a minority of a people has been in all ages detrimental to the wielders of it. Parliament must protect the local prohibitionists themselves from such ethical degeneration as the enforcement of their improvident doctrines infallibly would occasion.



THE HYGIENIC ASPECTS
OF CERTAIN
SUGGESTED FISCAL CHANGES.*

I INTEND to deal with "Fiscal Policy" in this paper neither from the standpoint of the politician, nor from that of the partisan,† but from that of the hygienist. The unintended effects of legislation exceed the intended effects, in practical importance, so commonly that a philosopher is not surprised to find politicians ready to alter the incidence of our taxation without even thinking of what will be the possible effects of such alteration

* 1903.

† The writer has always been an ardent Federationist, and whilst an undergraduate at Cambridge (nearly a score of years ago) was honorary secretary to the University Branch of the Imperial Federation League.

upon the health of our people. After all is said that can be said in favour of "fiscal reform," a healthy population will remain at once the most precious of our imperial possessions, and the most valuable of national assets. To think imperially is to realize this.

The suggested fiscal changes I propose to discuss are the lowering of the duties on tobacco, tea, and sugar as compensating for the imposition of duties upon corn, dairy products, and meat. I shall confine myself to the prospective, and, I feel sure, unintended effects of these changes upon the health of our people—if this special sort of "fiscal reform" be carried into effect.

It is a characteristic of current confused political thinking to say:—"If a man pay £1 a year in taxation, what difference can it make to him, and to the nation, whether he pay it as now, in tea, tobacco, and sugar duties, or as proposed? If by placing duties upon corn, butter, and meat, we can give a preference to our colonies, and (as the proposers believe), by so doing, strengthen the bonds and ligaments of our Empire, and at the same time, so lower the duties on tea, tobacco, and sugar as to leave the taxpayer mulcted of no greater sum than before, surely it is not making too great a claim upon his patriotism to ask him to assent to these changes? The total amount he pays will be the same, and the political results of the alterations will be of incalculable benefit to our Empire."

So much for the intended purposes of the proposed fiscal changes. Let us now turn our attention to the prospective and unintended effects. First, however, let us grant that to those people who expend upon necessary food but a relatively small portion of their total income such alterations as those suggested are indifferent. To them it does not matter really whether the duties be levied upon tobacco, tea, and sugar, or upon bread, meat, and butter. But to the man who earns a relatively precarious livelihood only by strenuous exertion, it is a matter of the first importance—expenditure upon food being the main item in his private budget. It also is a matter of great importance to the State, as guardian of the public health, as I shall proceed to show.

Let us first of all consider tobacco. I cannot think that any fiscal reformer seriously deems this drug to be a food. Even if it were one, it is consumed by not more than two-fifths of the population. The great majority of our women, and happily, as yet, also of our children, prove that it is quite possible to live satisfactorily without it. A reduction in the tobacco duty, therefore, would *benefit, pecuniarily, only a minority* of the total population, and would benefit, hygienically, practically nobody. Such a reduction would compensate most inadequately for a duty upon cereal foods, which *every member of the community consumes*. Besides, it is not certain that the actual consumers of

tobacco would pay less in tobacco duty than they do now, for with cheapened cost an increased consumption very probably would result, supposing the smokers to remain the same in number. But there is good reason to expect that with a lowering of the duty, and, consequent thereon, a cheapening of tobacco, an increase in the number of juvenile smokers would follow. The Commission which has to enquire into the alleged physical deterioration of the race is a very proper body to enquire fully into the effects upon physical development of smoking if practised during the growing period of life. I, for one, shall be surprised, and vastly, if the consumption of tobacco, in any shape or form, can be shown to be beneficial to the growing.* Even for adults, and after toleration has been established, the utmost that can be claimed for tobacco is that the smoking of it contributes to the comfort, and not at all intrinsically, to the healthiness of living. The "soothing" influence which very properly is attributed to smoking, is due to sedative effect of tobacco as a drug, and the feeling of "comfort" which smoking induces in the majority of its votaries is due to the physiological effect of the repeated sucking. The result of any repeated sucking or sipping is a raising and equalization, at anyrate for a time, of blood pressure. (The reader can prove to himself that repeated

* See Appendix "B," on "The Influence of Smoking upon the Growing."

sucking or sipping tends to raise blood pressure if he keep a finger upon his pulse at the wrist, and either suck repeatedly at anything—even suck in vagrant air—or get someone to administer to him small repeated sips of some fluid). Now, inequality of blood pressure is a common, perhaps the commonest cause of the feeling of physical discomfort; and just as a baby can be seduced from a condition of fretfulness to one of comfort by sucking away at something—say a teat—so the smoker, by sucking gently at his pipe or cigar, brings about a raising and equalizing of his blood pressure, and experiences the sensation of physical well-being,* to which we apply the name “comfort.” That this effect is not due at all largely to the “bacteriated cellulose” smouldering in the pipe, etc., is shown by the fact that, in the dark, unless the smoker can see its actual glow, he commonly cannot tell whether his pipe is alight or not; and also by the fact that if seasoned smokers run short of tobacco they will stick their empty pipes between their lips and console themselves by “drawing” away at these. The smoker in short, like the baby with the teat, procures the physical basis of the “comfort” through the physiological effect of repeated sucking. The “soothing” influence is of course due, primarily, to the sedative influence of tobacco as a drug.

The commoner deleterious effects of smoking

* I do not forget that he obtains pleasure from the aroma and flavour of the tobacco.

are (a) disturbance of the digestive functions—with some smokers an acrid type of dyspepsia is set up, particularly if smoking be indulged in when the stomach is empty; (b) sub-acute inflammation of the mucous membrane of the throat, etc.—a vast amount of more or less chronic congestive trouble in this region is due to smoking, and commonly the result is some dulling of the sense of taste, and occasionally of that of hearing also (from spreading of the throat mischief up the “eustachian tubes”—channels leading from the throat to the ears); (c) some tendency to deoxygenation of the blood by the Carbon-Monoxide contained in tobacco smoke, especially where inhalation is practised—this effect is most marked in the growing; (d) depression of heart, with nervous fluttering on slight effort—this is specially an effect of smoking persisted in beyond the smoker’s “toleration” limit—“tobacco heart” is a perfectly well known and likely to become a yet more frequent source of cardiac distress; (e) smoking persisted in to physiological excess gives rise to interference with the nervous mechanism of vision, going on, in extreme cases, to tobacco blindness—a pretty stiff contra-account to set against soothing “comfort”!

It will be admitted that no adventitious cheapening of tobacco should be permitted to constitute a possible inducement to smoking, at any rate, in the growing; and that the practice of the habit among our boys is not lightly to be tolerated, much

less encouraged. That an increase in the quantity of tobacco consumed by grown smokers, and in the number of juvenile smokers almost certainly will be a result of cheapening tobacco, is a defensible, if not a demonstrable proposition. This is an effect which, I feel sure, is not intended, consciously, by the fiscal reformers who argue, and so fallaciously, that a cheapening of a *drug* (tobacco) used by a *minority of the feeders*, can, or will compensate us for an increase in the cost of cereal and other *foods which are consumed by everybody*.

Let us now turn our attention to tea. If tobacco be primarily a nerve sedative, tea is, before all things, a nerve stimulant. It is, as a matter of fact, a pure stimulant, and in no sense a food. The addition of milk or cream, and of sugar, gives to the infusion whatever food value it possesses. To treat, therefore, a lessening of the tea duty as compensating really in any way for an increase in the cost of true foods, so to treat this special proposition, is to trifle with the feeders. To procure the physiological effects of caffeine* (the alkaloid contained in tea), in an agreeable form, is the reason why people drink tea. It cannot be for the sake of the tannin, or for the minute amount of essential oil contained in the tea (though to the latter the "fragrance" chiefly is due); no, it is to secure the physiological effects of the caffeine that tea drinkers swallow cheerfully tons of the associated tannic acid—intrinsically

* See pp. 31-33.

a noxious astringent drug. Taking the annual consumption of tea in these Islands to be, in round figures, 200 millions of pounds (actually, I believe, it is rather more), and estimating the average proportion of tannic acid to be no more than 10 per cent., and assuming also that not more than 60 per cent. of this goes into solution—again a low estimate—not less than twelve million pounds of tannic acid are ingested annually by the consumers of tea. This consumption of a powerful astringent drug is one only of the unintended effects of our irrational drugging with tea. Its hygienic results cannot possibly be innocuous.

Intemperate or injudicious tea drinking brings about detrimental consequences, such as excessive nervous excitability and instability, with nerve prostration induced easily, sleeplessness, palpitation, neurasthenia, etc., but the most common result of injudicious, though not necessarily intemperate, tea drinking, is the production, the pampering, and the promotion of that special form of our national disease which is known as “tea dyspepsia.” As is the case with other varieties of our national ailment—dyspepsia—a comet-like tail of subsidiary troubles supervenes. This “tea” dyspepsia is due to the tannin and not to the caffeine contained in the tea. Such experiments as I have been able to make entitle me to say that caffeine, *per se*, taken in small doses, either with or soon after meals, is rather helpful than harmful to the digestive

processes. Tannic acid, on the other hand, hinders, if it do not altogether disorganize the digestive processes in nineteen out of every twenty persons, normally constituted, particularly if it be taken before a meal. The very few persons whose digestive processes are not hampered by the presence of tannic acid must possess abnormally relaxed mucous membranes, else infallibly these would be astringed to a greater or lesser degree. Of course I well know that tannic acid as "ingested" with tea is "exhibited," speaking of it therapeutically, in small diluted doses. Commonly we may take the average dose to range from two-and-a-half to five grains. But as the drop of water, falling with repeated drip, wears out the stone, so, as small a dose of tannic acid as two-and-a-half grains inflicted upon a long suffering stomach two, three, four, and even more times a day, will, in time, astringe its surface into a chronically irritated condition.

When I was one of the doctors to a Public Dispensary in the north of England, three out of every five women who came under my care suffered definitely from tea dyspepsia. I have every reason to believe that the ailment is as common wherever tea drinking is prevalent. How detrimental to our national healthiness any widely-spread type of dyspepsia must prove, it needs no words of mine to make evident. Unfortunately, dyspeptic ailments are our most subtle and prevalent disorders. The fate of nations it must never be forgotten depends

upon their digestions. No amount of politico-economic philandering can convert tea—a nerve stimulant, and (as at present consumed) a digestion deranger—into nutritious provender ; or a lowering of the duty upon it into any valid compensation for a heightening in the cost of our real foods. Tea, moreover, *although drank by a large majority of the population, is not consumed by everybody as cereal food is.*

We will now consider the case for sugar. Sugar differs from tea and tobacco, in being in and of itself a fuel food ; in that it yields up heat, and supplies energy, to the consumer. Its food value in these respects is about half that of butter, and rather less than half that of dripping. It is much cheaper, proportionally, than is butter (which under the proposed changes would almost certainly become dearer). Sugar forms one of the group of carbo-hydrates or fuel foods, these constituting the great sources of bodily heat. They are therefore specially needed by, and helpful to the growing—who need above all things to be kept warm. Sugar, moreover, is a proteid (meat) sparer, and a potent muscle food. It is in this respect of great value to the physically strenuous, particularly in tiding over a period of stress. On account of the facility and rapidity with which it is absorbed, it has a special value to meet the demands of an exceptional muscular effort. Already its relative cheapness is leading our poorer people to use sugar in place of fats as fuel food. Whether this propensity can

re-act beneficially, upon our racial prospects, it is too soon yet absolutely to determine. Fats, and in particular milk fats, have a quite exceptional value in the feeding of the young; and not a few reflective observers are inclined to attribute an alleged increase in rachitic ailments among our children to the relative deficiency of fats in their foods. Thus, Dr. Hutchison, in his admirable treatise on "Food and the Principles of Dietetics," says, "the association of rickets, especially, with a deficiency of fat in the diet, seems to be pretty firmly established." Cheapness of sugar has led to cheapness of jams, and, among the poorer classes, to the giving of bread and jam in place of bread and butter and bread and dripping. The substitution is not hygienically economical, however attractive the jam be in flavour. Fruit acids, combined with sugar, constitute a questionable type of staple diet, prone as the combination is to undergo fermentative changes in the human interior. That this substitution of jams for butter, dripping, and good margarine, for animal fats in short, is taking place, and upon a considerable scale, there is little doubt. I fear there will be little doubt also, of the effects of this change, if it go on unchecked, in the course of another decade. What one would like to see is jam spread lightly over bread and butter, but if one or the other must be given up, in my judgment, we can afford least to deprive our young people of the fat.

Whilst holding these views of the possible effects of over-cheap sugar, I have no hesitation in affirming that reasonably cheap sugar (say at the price ruling at the beginning of 1903), upon the whole, has been a blessing to our poorer brethren. It is questionable, however, if it will remain a blessing if it become so cheap as to lead to the further supersession of fats by it in the feeding of our young children. So to those who say, "Will it not promote the healthiness of our people to have sugar made even cheaper than it was, say at the beginning of the year 1903?" one can reply, "I have grave doubts. In diets you can have too much of a good thing." Then as sugar, from the standpoint of cost (1903), is very much on a par with bread as a fuel food, that is, threepennyworth of sugar will yield up pretty much the same amount of body heat, etc., as will threepennyworth of bread; as this is the case, to reduce the cost of the one, and to increase the cost of the other, will not benefit the average consumer of both bread and sugar (and as a fact there are many more consumers of bread than of sugar, for, by no means, everybody consumes the latter). It may lead the average consumer of both to eat less bread and to consume more sugar, with results that are more likely to be harmful than aidful to his health and vigour. On the whole, I think sugar at the prices ruling at the beginning of 1903 sufficiently cheap, looked at from the standpoint of the hygienist, and would much rather

see butter cheapened. The advocates of certain suggested fiscal changes contemplate jauntily the prospective imposition of a duty upon all non-colonial butters ; they are, in this matter, improvident financiers.

Let us now turn our attention to the hygienic dangers of consuming, however irreflectively, too much of our carbo-hydrate food in the form of sugar. A consideration of the risks involved will give us reason to question the prudence of cheapening this fuel food improvidently. The first thing we have to take note of is the fact that crude sugar is an irritant of the tissues, and needs to be distributed among and intermixed with other foods, or to be well diluted, by dissolving it in some diluent fluid. The giving of crude sugar, sweets, etc., to the young is already the cause of a sensible amount of digestive disturbance in children. By becoming cheaper, sugar is only too likely yet more to upset juvenile stomachs (and tempers). One effect of the irritant action of insufficiently diluted sugar upon the stomachic mucous membrane is to upset and derange the normal digestive processes ; to set up, in fact, another variant of our national disease—dyspepsia. The acid eructations which result, work mischief with the teeth, and other subsidiary troubles afflict the alimentary channel ; to say nothing of those which may affect the skin, etc., from the blood becoming intemperately acidulous. Thus the consumption of

over-much sugar, excellent fuel food as it is, and muscle sustainer too, may, and if practised on a great scale, most probably will, do serious damage to our national vigour. In view of the proverbial improvidence of our people in all that relates to their diet, it is not prudent to permit sugar to become too cheap. In adults, sugar, besides its tendency to give rise to an acido-mucoid, fermentative type of dyspepsia, appears to interfere with the complete disintegration and digestion of proteids (meats), and unless the consumer be physically very active, this not infrequently results in "gouty eczema," etc., and hence sugar is prohibited to those prone to be "gouty," *i.e.*, to those people who store up uric acid, and whose eliminative functions fail to keep the system scavenged efficiently.

I abstain purposely from entering upon the financial aspects of the proposed interchanges in our taxation—my concern being primarily with their hygienic aspects. Our national healthiness is, or rather ought to be, our paramount consideration. It will have to be the primary concern, even of our political leaders, if we propose to remain an imperialistic people.



THE CONTROL AND MANAGEMENT OF MILK SUPPLIES.*

THE circumstance that milk tends to be used more largely gives to all regulations relating to its production, and distribution, an increasing hygienic interest; whilst the facility with which it can be polluted with dirt, etc., and also can be made a vehicle for the conveyance of specific disease, makes the effective control of milk supplies a matter of national importance. Our infants have to depend more and more upon non-human milk for their early sustenance, and the number of invalids who virtually live upon milk is always great. Being in itself a complete food, it is for these "the staff of life."

It is not necessary for me to reproduce the reasonings which give the State a claim to regulate

* 1904.

the milk traffic, either directly through its own officers, or indirectly through local health authorities. I am all in favour of the control being effected by the local authorities directly, and by the State indirectly, through inspectors, etc.; *i.e.*, the State Public Health Department, when we have one, should satisfy itself that the local authorities are maintaining an effective control over the local milk supply; and wherever this control fall below the minimum required, should be empowered to enforce that minimum, and, if need arise, to supersede the defaulting local authority, and to surcharge it with the costs of such supersession.

The State can, and now should, make applicable to the whole country statutory regulations, the purport of which shall be to ensure that certain minimum standards of (*a*) healthiness in all cows which are milked; (*b*) cleanliness in the milking sheds, in the milkers, and in the vessels used in milking; (*c*) care in the treatment of the milk at its source, in its transit, and in its distribution, shall be maintained, and require local sanitary authorities to enforce these. This can be effected either by expanding the existing Dairies and Cowsheds Orders, or by a short Act of Parliament. The latter would, I think, be the more effective course. The minima aimed at certainly will not be lower than those now secured to certain companies by the provisions of their contracts. What is needed being untrammelled liberty to inspect all cattle used for

milk production, and power to prohibit the disposal of the milk of any doubtful animal; power to prohibit the sale of milk if the premises are below the minimum standard in general cleanliness, or if there be a deficient, doubtful, or dangerous water supply; and, generally, to prohibit the carrying on of dairy business unless the provisions of the statutory minima are complied with. I think the safest, and at the same time the simplest, course to follow will be to make it compulsory for every producer of milk, intended for the food of man, to procure a licence from the local sanitary authority; and then to make the granting and continuance of the licence dependent upon the premises, etc., being placed and kept in a satisfactory condition. It is not going too far to affirm that, given such a system of licensing, it will be possible to prevent the use of any unhealthy cow, dirty cowshed, or doubtful water (for cleansing the utensils, etc.), and that, too, within the space of one year; in short, to secure the minimum standard determined upon, in care and cleanliness at the sources of supply. Certain private dairy companies, for example, do this now, and what a private company can secure, the State assuredly can enforce. I should like to see, made applicable to the whole kingdom, a statutory regulation to the effect that all milk, intended for the food of mankind, shall be strained, or, better still, centrifugalized as soon as possible after it has been drawn from the cows, and then (after the separated

cream and milk have been re-mixed) cooled down to and kept at a low temperature. Although straining through cotton, etc., gets rid of gross dirt, it is not nearly so effective a screening agency as is centrifugalization. Also, I should like to see farther regulations respecting the temperature at which milk must be kept in transit, and at any depôt from which it may be distributed. Low temperatures are the safest preservatives to employ in dealing with milk. Below 45 degrees Fahrenheit bacterial activity is virtually inhibited; and at low temperatures milk can be kept in a "fresh" condition for long periods. Sanitary supervision of the actual milk shops would of course fall to the local authorities, and a stringent minimum standard of cleanliness, etc., ought to be required in these. It should be possible to prohibit the selling of milk from open vessels in "general" and other shops: for contamination of milk when sold from open vessels on the counter of a "general" shop (where you can procure onions, say), is inevitable—not only with shop, but also with street dust, and always there are the ubiquitous, dirt-bearing flies. Very stringent clauses respecting the notification of any infectious illness among those associated with the production and distribution of milk, in any of its stages from the source to the consumer, obviously will be included among the suggested statutory regulations.

It is my belief, however, that the most valuable regulation respecting the distribution of milk will

be one requiring it to be *sold only in bottles, or in vessels which can be stoppered or sealed securely*, or otherwise protected from interference. Each bottle, or can, to carry a label stating from what depôt, or farm, the milk is derived. I know quite well that to prohibit the peddling of milk from door to door, and to require that it shall be sold in bottles or cans, will mean an increase in the cost to the consumer, certainly to the small consumer; and face that prospect frankly. In my judgment such increase in cost will be compensated for, and amply, by the warranty of cleanliness in source, and of absence of deterioration in distribution. It has been clear to me for a long time, that milk of a guaranteed standard cannot be supplied profitably at the price at which it is peddled by peripatetic retailers; that is, if adequate hygienic safeguards are enforced.

For example, in the city in which I live milk is sold at $1\frac{1}{2}d.$ a pint. I have little doubt that if the safeguards I suggest were enforced, this milk would be $2d.$ a pint (taking a fair average), $1d.$ for a half-pint bottle, $2d.$ for a pint, and perhaps $3\frac{1}{2}d.$ for a quart bottle. I do not think that half-a-pint of good fresh milk of guaranteed quality can be considered dear at $1d.$ The bottle question could be settled by requiring a payment to be made on the first one, say $1d.$, and then day by day exchanging an empty for a full one. Even at this enhanced price I take it that the supply of guaranteed

milk to the small purchaser would not be an adequately paying business, viewed commercially ; and as it is the poor who suffer most from inferior—and most need good fresh milk—it is, I think, either to philanthropic associations, or to public authorities that, in the future, we shall have to look for this work to be done. To some agencies whose first aim will not be the earning of dividends, or even the making of a living, but the supply of a clean, fresh milk, of a guaranteed quality, at the lowest possible cost. If such work were undertaken by a sanitary authority, then I think it should be restricted rigidly to supplying milk of the minimum quality. I am averse altogether from communal trading in more than the standardizing minimum ; trading in anything beyond that being, in my estimation, the proper field for private enterprise. In saying this I do not assume that the agreed upon minimum standard quality of milk always will remain say at 3 per cent. of cream ; there being good reason to expect that the average proportion of cream can be heightened as the result of care and skill in the feeding and breeding of dairy cattle. Even now a London Dairy Company, for example, requires and secures milk containing $3\frac{1}{4}$ per cent. of cream. In the city I live in, 25 per cent. of the samples of milk analysed contain more than the Board of Agriculture's standard of cream, viz., 3 per cent. ; it is also true that 25 per cent. of the samples analysed contain less than 3 per cent. of cream, and much of

the milk well up to the 3 per cent. standard in cream cannot, in my judgment, be regarded as being hygienically "fresh."

To revert, however, to bottled milk. Having received a bottle, every householder can at least place it in a vessel of cold water and keep it cool in hot weather;—for only a small minority of the consumers will possess refrigerators. I know the difficulties of cleaning bottles which have contained milk. These would be lessened by asking each purchaser to fill the bottle with water as soon as it was emptied—all actual cleansing being effected at a *depôt*; hot soda solution being used, followed by sterilising with steam. Where it is not practicable to bottle milk at its source, after straining and cooling, it should be sent at low temperature to a central receiving station or *depôt*—be there centrifugalized, the separated cream and milk re-mixed, bottled, and be kept whilst in the *depôt* and, if possible, during distribution, at the lowest practicable temperature. A possible method of control would be to require all milk which it was proposed to sell within a district to pass through and receive permits from a central *depôt*, a sort of milk clearing house. This would amount in practice to the establishment of a central *depôt*, similar in character and functions to those established by large dairy companies in Copenhagen and London. All unbottled milk would have to pass through such clearing house, be examined, tested, and certified

before it could be sold. Another proposal for dealing with milk, is that the sanitary authority shall supply a specialized kind of milk, what is known as "sterilized milk" for infants; and to this extent several sanitary authorities already have become traders in milk—what is supplied being not sterilized milk simply, but a prepared milk food for infants—a so-called "humanized" milk: that is to say, cow's milk diluted with water, and to which sugar, salt, and often cream have been added; the whole being sterilized, with greater or lesser efficiency, put up and sold in bottles containing single feeds. I think that sanitary authorities, if they adventure into trading with milk, should certainly be prepared to supply sterilized "humanized" milk for infants, when this is prescribed, as a nutritious medicine, by the Poor Law Medical Officers for pauper patients. With proper care in the handling and distribution of milk, the need for this sterilized type of lacteal nourishment is likely to become relatively little. Apart from its influence upon the nutritive value of milk, sterilization is the wrong principle to enforce—it tends inevitably to promote carelessness in the handling of milk, whereas what we need most to inculcate and to enforce is a scrupulous, an exquisite cleanliness. Why should the farmer or the milker take exceptional or even ordinary care to prevent contamination with dirt, etc., when you announce (erroneously) that you are going to make such dirt innocuous by sterilizing the milk? In

practice he will take no such trouble, it being to him obviously a troublesome waste of time, energy, and money.

I used the word "erroneously" above advisedly, because you cannot and do not necessarily render precedent changes in the milk innocuous by sterilization at a dépôt. All you can do is to stop farther putrefactive or other bacterial activity; such alteration as already has taken place in the milk will remain; what you do, at and from the time of sterilization, is to check farther activity, provided that you keep the sterilized product from contact with the air. If sterilization at high temperatures be the right treatment of milk, such sterilization, *to make it really effective, ought to be carried out at the source of supply.* I believe that the final solution of the standardization of our milk supplies will be found in establishing a statutory minimum in quality, and requiring local sanitary authorities to see that this is furnished; which, when the administration of the Poor Law becomes a part of their functions, it is probable they will effect most economically and efficiently by supplying it themselves. For if milk of the minimum statutory standard in quality is to be furnished, in bottles, at the lowest possible cost to the poor, it will be necessary to eliminate profit, and that is a method of trading we cannot expect from average private persons, however philanthropic.

Our concern in striving for the attainment of a

standardization of national life in the matter of milk supplies is to determine upon a statutory minimum in quality, and to see that it is furnished. We parted once and for all with the principle of leaving supply and demand to settle the selling of milk when we established a minimum for the guidance of magistrates (*e.g.*, the Board of Agriculture 3 per cent. of cream standard), and to secure the poor such minimum at minimum cost, in my judgment, only will be practicable by eliminating private profit. If milk of a quality above the statutory minimum be required, that, very properly, can be left to private enterprise ; and I have little doubt that a highly profitable business will reward the private supplier. But, whatever method be followed in the control and supervision of milk distribution, unless the bottling or canning of it be insisted upon, with the affixing of a label over the cork, stopper, or lid, giving date and source, unless these regulations be enforced, no matter how excellent may be our management of cowshed and depôt, all our efforts to protect the actual consumer can be, and only too probably will be, rendered nugatory. The great risks of adulteration and contamination arise in the progress of milk from the cow to the consumer—in distribution. To provide a Public Testing House for Milk would in no wise guarantee freedom from adulteration or contamination *after* the milk had passed through the testing house, but only that no inferior milk would be permitted to

leave it. Unless the tested milk be sent round in bottles or other sealable vessels, the milk will be at the mercy of the distributor every bit as much as it is at present, and be as liable to receive drippings from his clothing in wet weather, and dust, etc., whenever he opens his cans to ladle out milk in dry weather. Even if a sanitary authority were to trade in milk in the ordinary way, that is, peddle it from door to door, no more real protection would be afforded to the consumer. In fact, we come back to our fundamental requirement, viz., *that milk for domestic use shall be sold only in bottles or other sealable vessels*, and that these shall be sealed securely and labelled clearly. Protection from contamination *inside* the dwelling must be left to the purchaser.

P.S.—For a modified form of sterilization known as “pasteurization,” it is claimed that it does not affect the flavour or the nutritional value of the milk as does the former method, and that it is quite effective in killing off certain putrefactive micro-organisms, and in rendering innocuous some pathogenic ones also, except in the form of spores.

NOTE.—On p. 142 for 45 *read* 40 degrees Fahrenheit.



BATHS AND BODILY CLEANLINESS.

FAR too much importance is attributed to water as a cleansing agent, and far too little to air. We forget that man has ceased to be an amphibean, and that for all practical purposes the air forms the medium wherein he lives and moves, and has his being. Later on I shall adduce reasons why to rely upon heated air, as a cleansing agent, is more sensible than to depend upon heated (or cold) water. Let us, first of all, consider how man keeps his skin physiologically clean, and by physiologically clean I mean not merely free from dirt, dust, and soiling *on its superficial surface*, but free from impurities throughout its structure. He does this most effectually by muscular exertion. By continued muscular exertion a man produces in himself a glow of warmth which leads to the

exudation through his skin, not only of certain diffusible by-products of tissue change, but also of fluid in the form of what we call "perspiration" or "sweat." (Perspiration sometimes supervenes upon purely mental states, but this is rather pathological than normal, or as an effect of drugs). Thus it comes about that, essentially as contradistinguished from superficially, the average navvy's skin is physiologically cleaner than is the average dude's; and this superiority in cutaneous cleanliness the navvy owes to the circumstance that his occupation keeps his skin cleaned from below, whereas the average dude cleans his only from above;—the one cleans his skin from the in, the other from the outside. If you will take sections from the skins of an average navvy and an average dude, and place these under a microscope, you will apprehend more easily what one means by physiologically as distinct from superficially clean. You should take your sections on a week-day. It is the working day stream of exudation which makes the navvy's skin so beautifully clean—in the physiological sense; whereas the poor dude, though he tub in cold, and bath in any amount of scented water, only cleans the outer surface of his skin, and leaves the inner not uncommonly in a disgracefully dirty condition. Of course, if the dude do a good honest day's labour, or even if he make himself perspire more agreeably with "exercise," he also will cleanse his skin as well as its superficial cuticle; and as he will be

more particular than is the average navy about washing off the extruded material, he will become for the time actually, as well as ostensibly the cleaner. Indeed, it is his carelessness about washing away the extruded material which gives to the skin of the navy a superficial appearance of being unclean. He is apt to leave the cuticular sweeping and garnishing to be performed by his under-clothing; which again, he usually does not change often. The odour perceptible, so frequently, when you are in the neighbourhood of limb-labouring men, is due not to their dirty skins, as you are apt foolishly to think, because physiologically their skins are among the cleanest in the kingdom, but to their too infrequently changed under-clothing.

To become and to keep yourself really clean of skin, you need to set up a perspiring process through your cuticle—by labour, or by “exercise”; or failing these, by means of heated air or vapour baths, and then apply to its proper ablutory purpose, that of washing the extruded dirt from the superficial surface of your skin, what usually you now rely upon for the cleansing of your skin, viz., water. I refer here more particularly to the cold bath fraternity, and the illuded morning tubbers. The use of soap aids, of course, in getting away dirt from the upper layers of the skin, and abstracts as well the natural oleaginous secretion, whose function it is to keep the hairlets, and the cuticle generally smooth and pliant. Then the use of hot water

baths is not without a mitigated efficiency. As skin cleansers they certainly are superior to cold water baths. The heated water causes the cuticular blood vessels to dilate, the hot surging blood is brought more freely toward the surface and stimulates the various secretory and excretory elements in the skin to a heightened activity, some dilatation of its pores takes place, and waste material is loosened from its moorings. Everything, however, that can be effected by hot water can be carried out more efficaciously by hot air. A bath of heated water is a delightful adjunct to a bath of hot air, and, indeed, almost is needed to wash away thoroughly the material brought to and deposited largely upon the surface of skin by a cleansing initiated from within, unless the exudation so set up partake of the character of a deluge. The proper order for hygienic skin cleansing is labour or exercise carried to the perspiring stage, a warm water bath to wash away the wastage, and then a cold affusion to tone up the nerves and vessels again. If you have to decline upon hot air, or vapour, baths in place of muscular exertion, take thereafter a warm water swill and go forthwith to bed, and you will sleep the sleep of the clean. If you are hale, and sensible enough to get a stream of exudation filtered through your skin by muscular exertion, a warm or cold water wash will refresh you, and certainly should be a prelude to dressing for dinner; or, if sufficient water be not handy

for a bath, a sponge and a bowl will suffice; or, failing this, to curry-comb your cuticle with a rough dry towel is not at all a bad way of raking off the *débris* from the surface of your skin. Then in the morning you can take your cold bath or "tub" for its real and proper purpose, viz., a delightful and invigorating nerve tonic, applied through the skin. For I would have it understood that although few things fill one with more commiseration than the average Britisher's illusion that his morning "tub" is a real skin cleanser, such surface cleansing as is effected being due principally to the rubbing dry business with the towels—there are few customs which, complied with for their intrinsic hygienic value, I hold in higher honour than the taking of a cold "tub." High honour, in the hygienic sense, consisting in the observance and not in the breach of a custom. Give up then, once and for all, the notion that by taking a cold plunge bath, or a cold "tub," you are cleansing more than just the surface of your skin. You may take such a delightful adjunct to the salubrities of living every day, and yet retain and maintain essentially a dirty skin; as you can demonstrate to your own satisfaction, if you take a hot air bath and note the character of the material exuded from your bogus-cleansed, morning-tubbed skin. To really cleanse your deep, essential skin, you must cleanse it from within, by labour, exercise, or heated air or vapour.

Now, as to the ritual of temperance in this

matter of keeping clean the skin, and it really is an important hygienic matter, for if the skin be not active, excessive strain is thrown upon other organs, and, notably, the kidneys. If you are healthy, muscular exertion, either in the shape of labour, or what we call "exercise," will affect most healthily the cleansing, provided that these be so practised as to lead to a salubrious perspiration. Your concern then will be only to wash away the waste material carried up to and deposited upon the upper surface of your skin—and most probably upon the under surface of whatever garments are in contact with your skin. Hence the rationale and the desirability of changing your underclothing with reasonable frequency; and hence also, the cause of the distinctive sapid smell which clings to those who labour and earn their livelihood, or their healthiness, in the sweat of the bodies, but do not change sufficiently often the clothing which comes into contact with their skins. A considerable amount of more or less putrescible organic matter is carried out in and by the exudation of perspiration through the skin. In certain conditions of ill-health, which imply certain conditions of the blood, the odour of the perspiration is a diagnostic aid to the physician, *e.g.*, the characteristic acid smell which accompanies rheumatic fever. We all know that a persistently heated skin without perspiration is a danger signal, and usually signifies the onset of serious illness.

From the foregoing it will be inferred, and rightly, that in the provision of public baths the writer would like to see adequate provision made for heated air baths and warm water swills, and the swimming tank used chiefly for the purposes of a tonic to tone up the skin before going out into the open air. For unquestionably, to take a hot air bath and then go forthwith into the possibly chilly air, is a procedure accompanied with risks—risks which are reduced to a minimum, and indeed made altogether to disappear by douching first with warmed and then with cold water, followed of course by dry rubbings. Now, whilst it will be within the power of a few to fit up for themselves private baths of the character suggested, it will be obvious that for the great bulk of the people such hygienic household equipments are quite impracticable of attainment. Hence the claim for public baths on a scale commensurate with the population. Public baths in which it shall be possible to obtain an “incandescent light,” hot air, or vapour bath, with warmed and cold water adjuncts, for small sums relatively; from, say, a shilling to, one hopes, a penny, according to the character of the accommodation in non-essentials, *e.g.*, privacy, fittings, etc.—the baths, in essentials, to be the same for all and sundry.

For use in houses, various portable “cabinet” baths are sold. With one of these a reasonably effective “light” hot air or vapour bath can be taken in one’s own dwelling. The taking of these,

or any other kind of bath, in one's actual bedroom is not a commendable practice; and, wherever practicable, baths should be taken in a separate room. In these "cabinet" baths the source of heat is either incandescent electric lamps inside the cabinet, or a lamp burning spirit inside or, preferably, outside of it. "Rectified spirit" is much more agreeable in smell than the "methylated," but is much dearer than the latter. The "cabinet" closes about your person, leaving your head outside. A very copious perspiration can be induced, which, of course, means an effective skin scavenging; and you can then douche with warm water, dry yourself with towels, and go forthwith to bed. If you are not going forthwith to bed, you should affuse yourself with cold water before drying and re-dressing. I do not think much of the objection which is raised against keeping your head in the unheated chamber air whilst the remainder of your carcase is encased in the cabinet. On the whole, this exposure of the head keeps you a shade cooler, because of the loss of heat from your head; and it has the practical advantage of keeping your nostrils out of the closed box, which the cabinet becomes, and so saves you from suffocation in a very smelly atmosphere: for you probably will be surprised to find how nasty the exudations, through even your skin, will smell when these are carrying off the accumulated "humours" of your body! The risk of

fainting can be guarded against by never taking a bath directly after a full meal, and also by not taking one when the stomach is achingly empty—when, in short, you are feeling exhausted. People with heart affections must consult their doctors before venturing into a cabinet or other hot air bath, and always should have someone in attendance. The fairly sound, and those who desire to remain hale, are my quarry. Get into a bath as it is warming up, and you will warm up agreeably with it. A pan filled with hot water for your feet, is a desirable adjunct. You sit, of course. It is well to use only a fixed and definite quantity of spirit, and so to set a limit to the time during which heat can be furnished. A cabinet bath with a double bottom, so arranged that the heat shall gain admission through the space between the bottoms, seems to be the most sensible sort of structure to provide where dry air or vapour, conveyed from a lamp, is the source of the heat; but no cabinet bath I have seen is so constructed. A cabinet so constructed could have the upper bottom perforated along its borders, there to admit into the cabinet proper the heated air or vapour. A moveable perforated wooden platform would preserve the feet from becoming overheated, and from injury through being brought into direct contact with the heated bottom. An incidental convenience of the cabinet bath is the opportunity it furnishes for applying medicaments, aromatics, etc. A self-respecting

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person commonly will make use of one of the latter ; though the odour of the burning spirit, if "rectified spirit" be used, is to some sufficiently agreeable. People very susceptible to alcohol should not take a cabinet bath in a confined and inefficiently ventilated room, else they may find the fumes of the burning spirit bring on the symptoms of a species of intoxication—maudlin stupor, obfuscation of the intellect, etc., etc. It is possible that some of the instances of failure of consciousness recorded as occurring in the users of cabinet baths, have been due not to fainting, but to the fumes of the lamp. Carbonic acid gas is of necessity liberated. Whatever kind of apparatus is used—and the incandescent electric light bath unquestionably is the cleanliest—it is of the utmost importance that it be capable of being cleansed easily and thoroughly ; otherwise it infallibly will become a cultivator for germs, and a generator of smells.

As to frequency of use, a hot air or vapour bath may be taken once, twice, or, in special cases, three or more times a week. These special cases are best determined by a doctor. The reader, however, is begged to remember that the heated air bath is at best but an artificial substitute for the natural process of skin cleaning—the bringing about of a generally diffused cutaneous exudation, by muscular exertion. And the reader is advised only to use hot air or vapour baths if the more salubrious methods of cleansing the skin are inapplicable and

unattainable. The idle and the sedentary should bear in mind the fact that the high temperature with which the body is surrounded in an artificial sweat inducer subjects the heart to sensible tension.

As to length of time one should remain in any hot air bath, a good general rule to follow is to stay in it just so long as it takes to get your whole cuticle dripping comfortably with serous exudation. A more lengthened stay is apt to exhaust, and tends assuredly to enervation. Once copious perspiration be set up, you should remain longer in a bath only by the express prescription of a doctor. He, for special reasons, may want to wring as much exudation from you as possible; but it is folly in you to proceed to this extremity without imperative direction. Seeing that you will get rid of a very considerable amount of fluid, and probably upon a first trial of a hot air bath you will be surprised to find how large an amount of fluid you will part with, there commonly will result a certain relative aridity, and a instinctive thirstiness. *If the thirstiness be instinctive*, take a good diluent drink; water, hot if you prefer it so, or just chilled is perhaps the most commendable drink, provided that the water be choicely good; or you may drink freshly prepared weak tea, or, better still, you may dissolve a half-grain pellet of citrate of caffeine in some choice hot water, and add, if you like, a slice of lemon; or flavour your choice hot water with lemon alone, or add to it (if

ordered) some specific medicament—such drugs as whisky, etc., being excluded with arctic rigour.

N.B.—The cabinet electric light bath I have in mind is one fitted with incandescent lamps, on all its surfaces, so to induce a gentle, grateful flow of perspiration, by warming the skin during the time the lamps heat up the air; not the baths with electric “arc” lights for specific medicinal treatment. Of all “cabinet” baths the electric incandescent light baths are the cleanliest, and, unfortunately, they are also (at present) the costliest. I repeat, in conclusion, the warning, that all artificial inducers of perspiration need to be used with caution, and are used best only when their use is advised by a judicious doctor. The healthy ought always effectually to cleanse their skins by muscular exertion, in preference to any artificial methods; which, indeed, properly are the refuge of the ailing, and improperly of the decadent.



APPENDIX A.

THE POSITION, PAY, AND PROSPECTS OF HEALTH OFFICERS.

THE position of affairs at present is pretty much this:—each “Sanitary Authority” appoints its own health officers, and the majority endeavours to consummate the engagement cheaply. A depressing feature of local self-government, as conducted by payers of rates, is the persistency with which efficiency can be sacrificed to cheapness. The legal officers usually are paid very fairly—the protection of property being something congenial to the average rate-payer’s mind. It is a feature of the national habit of canting to proclaim that the health of the people is our first consideration. If any reader doubt, let him note the relative scale of pay which is awarded by public bodies to their health officers, and note how this scale compares with that awarded to their lawyers, aye, and

also to their surveyors. The usefulness of good roads, etc., like the protection of property, comes home to the business and bosoms of "practical" men in a way that the rationale of preventive sanitation does not. Whatever men do not understand they tend always to regard with a mixture of fear and dislike. In the matter of State Hygiene, the dislike finds expression in chastened remuneration, and the fear in futile repression. That, speaking broadly, nothing is so cheap as efficiency, and nothing so inefficient. *per se*, as cheapness, in the matter of health protection; this is an axiom to the truth of which the mind of the average rate-payer is impervious.

Some attempt has been made to acquire a partial control over the appointment of health officers in rural districts, and certain technical qualifications are required in health officers for large urban districts by statute. These latter are summarized in the statement that—since the 1st of January, 1892—no appointment of a Medical Officer of Health can be made in any county, urban, or rural district, or combination of districts, with a population of 50,000 and upwards, unless the officer possess, in addition to the ordinary registrable qualifications, a Diploma in Public Health, Sanitary Science, or State Medicine (Section 21, Medical Act, 1886); or has during 1889, 1890, and 1891, been Medical Officer of Health of a district, or combination of districts, with a population of 20,000 at least. Appointments of Medical Officers of Health to rural districts—the same is true of sanitary inspectors—have now to receive the sanction of the Local Government Board, both as to their fitness, and as to terms, tenure, etc.; and the officers have to send copies of their reports, etc., not to the Local Government Board, but to the county councils; which councils pay half

the stipends, the rural district authority providing the remaining moiety. The county council payments are made from the contributions received from the Exchequer. County boroughs and county councils, unfortunately can, and commonly do, make their appointments without even consulting the Local Government Board. Where the county provides a Medical Officer of Health, the method of working, which is most satisfactory, is pretty much as follows:—The county Medical Officer of Health collates and redacts the reports of the district officers, helps them with advice, acts as their consulting colleague, and exercises a general supervision over the sanitary administrative work within the county. He is, of course, the sanitary adviser of the county council, and his counsel should be of exceptional helpfulness in dealing with the establishment and location of isolation hospitals, rivers pollution, water supplies, housing the poor, etc., etc. Unluckily, a county council is not compelled to appoint such an officer; with this result, that each county is a law unto itself in matters affecting the health of the people. In Scotland every county council is under a statutory requirement to provide itself with a Medical Officer of Health. The Scotch, however, proverbially are harder-headed than the Southrons. They certainly seem to have a clearer apprehension of the truth that, in these matters efficiency is preferable to cheapness. A county council, *upon the complaint of a parish council*, can assume the sanitary functions of a defaulting district council in respect of such parish. In the county in which I reside, where, to say the best one can of it, sanitation is backward, parish councils rarely make complaint of any sanitary matter. If a stream, say, is being polluted, and the local

sanitary authority neglects to take action, and the parish council *does not make formal complaint*, the county council considers that it is helpless. The county in question, I need hardly say, possesses no county Medical Officer of Health. In sanitary matters, it is permitted to subordinate efficiency to cheapness. County borough councils also appoint their own Medical Officers of Health, and determine, at their own sweet wills, the scale of his pay and the conditions of his tenure of office—which, reduced to the lowest common denominator, amount to their own good pleasure; the sanction of the Local Government Board being, in practice, purely a matter of form, the ineffectual “Board” always giving way if there is any haggling. Its “sanction,” in short, amounts to a binding up of the improvident bargain with red tape of the Local Government Board pattern. Sanitary inspectors are appointed and paid similarly. These officers, like the medical ones, are expected to have special technical qualifications. The essential qualification should be the possession of a certificate of competency to act as an inspector, which is awarded, after examination, by the Royal Sanitary Institute of Great Britain. The examinations of this Body tend, happily, to heighten the standard required. Many sanitary inspectors, in addition to this certificate, hold special diplomas in practical plumbing, building construction, etc., etc., and, generally, it may be said that the modern sanitary inspector is an official possessing very considerable educational endowments, and what is more important, usually is very intelligent. In the discharge of his duties he, like his medical chief, is bound to make enemies, more particularly among the unintelligent owners of property. These property owners probably will be represented, directly or

indirectly, upon the public health committee of the sanitary authority of which he is a servitor; and well, in small places, the inspector's life will not be a happy one. Many and devious are the ways in which even a subordinate sanitary official can be made to feel that a conscientious incapacity to turn a blind eye upon the possessions of these masters of his masters can become a burden grievous to the bearer. Even when backed by his medical chief, as, if a competent as well as an honest official, he will be, the inspector finds himself, in the smaller places, only too often a marked man if he make application to have his pay heightened. Add the chronic incertitude attaching to his tenure of office, and I think you will be disposed to believe that there are heroes in the ranks of the sanitary forces who deserve a decoration as richly as their belted compeers who survive "the stricken field." The remedy for this state of things is very simple. It is to be found in statutory legislation, requiring; (*a*) the specific assent of the State Medical Department of the Government to the appointment of every health officer, no matter what his status; (*b*) reasonable security of tenure, by making it impossible for the local sanitary authority to dismiss a health officer without the assent of the State Medical Department—such assent, except for flagrant offence, only to be given after holding an inquiry—a civic court martial; (*c*) a preponderating influence to be reserved to the central authority in the determination of scales of pay, superannuation allowances, etc.; (*d*) half the pay to be given by the State directly from the Exchequer (national healthiness being a national interest and asset), and half by the locality; (*e*) copies of all formal reports to the local authority to be forwarded to the State Department, so that some

supervision can be maintained over the activity, or the neglect of the local officers and authority. In these ways it will be possible to create a thoroughly efficient State Sanitary Service, and practically in no other. The health interests of the whole people require that the public health officers become, in name as well as in functions, a State Service; and cannot be protected or promoted adequately without this. The public purse can afford, and the public conscience soon will require it. That "local authorities" will oppose the projected organisation of the sanitary service is certain. No "authorities" like to part with patronage, and all assemblies dote upon the possession of control. These, however, will have to realise that the claim to protect, and to promote the national health, is a claim to which the nation, as a whole, will award priority—when it takes its coming King's advice and "wakes up." The practice of permitting each sanitary authority to be a law unto itself has been tried sufficiently to prove its dangerous inefficiency. "Oh, reform it altogether!"

APPENDIX B.

THE INFLUENCE OF SMOKING UPON THE GROWING.

WE may leave the grown to determine for themselves whether the comfort they derive from smoking compensates for the possible ills the practice may inflict upon them. But in the welfare of

the growing we are all concerned, smokers and non-smokers, and vitally : if only out of care for the conservation, strengthening, and development of the race. And if we arrive at a reasoned conviction that smoking, in any form, is not beneficial to the growing, then I think our claim, as guardians and conservators of the health of our race, to discourage, or altogether to prohibit smoking, by the growing, is an unimpeachable one. Rightly to determine this matter, it will be necessary for us to consider briefly some physiological concomitants of the smoking of tobacco, and to consider these with the knowledge that all such influences are more potent in the growing than in the fully developed.

I need not refer to the influence upon the circulation of all repeated sipping or sucking, except to re-affirm that in this influence is to be found the main source of the "comfort" we derive from smoking.* Apart from this, tobacco acts as a stimulant to the intestinal muscles. After meals, smoking may, and probably does stimulate, mechanically, some outpouring of gastric juice (the stomach, you must remember, being just a distensible muscular bag), and so may aid in the digestion of such foods as are fitted for gastric dialysis; and at the same time aid that viscus to wriggle and propel some of its contents into the intestine. Whilst many smokers believe—and quite honestly—that smoking aids their digestion, there is no doubt that smoking can and does aggravate, if it do not originate, an acrid type of dyspepsia, particularly if the smoking be perpetrated when the stomach is empty. Putting aside the question whether the smoker's craving for his drug, directly after meals, is not of itself an impeachment of his methods in feeding, let us grant that he experiences an improvident pleasure.

* See p. 129.

Tobacco indulged in beyond the smoker's physiological limit appears to slacken all muscular movements, especially of "voluntary" muscles (those under the direct control of the will). In the days before chloroform was used, it was the custom to give a strong injection of tobacco to bring about a complete relaxation of these.

It is to its sedative effect upon the nervous system that the "soothing" influence ascribed, and truthfully, to tobacco is to be attributed. A sedative influence which, however soothing to the worried, is, like all sedatives, apt, nay, certain to become a depressant if taken in doses which exceed the proper therapeutic limit for the special patient. Over-smoking may mean no more than half a pipeful of tobacco, a cigarette, or a few whiffs at a mild cigar; therapeutic limits and physiological effects differ very widely in different people for such drugs as alcohol, tea, and tobacco; and over-smoking for the particular person, if persisted in, leads to grievous injury to the nervous system. Premonitory warnings are given in dizziness, stupor, tremors, etc., and in irregular fluttering of the heart, often enough distressing and always depressing to the inducer, or in detriment to the nervous mechanism of the eye; shewn by inability to distinguish colours, the appreciation of red going first. (If this symptom be ignored, over-smoking may lead to a toxic neuritis of the optic nerve, and even to tobacco blindness). Then tobacco tends to lessen the depth and frequency of respiration, and so may conduce to defective aëration of the blood; (if a person die from tobacco poisoning, respiration ceases before the heart). It has been shewn experimentally* that tobacco smoke passed through a solution of blood turns it to a pink

* *Lancet*, p. 43, January 2nd, 1904.

colour—the characteristic effect of carbon monoxide, a potent suffocative gas, what, indeed, people kill themselves with when they commit suicide with the fumes of charcoal. One ounce of tobacco, smoked in the form of cigarettes, yields one-fifth of a pint of pure carbon monoxide. There are also some organic acids—oxalic, citric, etc.,—in tobacco, and in smoking certain amines are formed, a circumstance which may help to explain why tobacco, and, particularly cigar smoke is so irritating to sensitive eyes; and also why congested throats, etc., penalize so frequently the votaries of “the weed.” I leave the reader to learn for himself the relative incidence of cancers of the lips, tongue, etc., in smokers, as compared with non-smokers. I say little also of nicotine, the alkaloid found in all tobacco, except that it is a marked retarder of protoplasmic life; because its presence in tobacco smoke is small, and most of the toxic effects one can attribute to it, are attributable also to carbon monoxide, which we know to be present in much larger amount. Where inhalation is practised the absorption of this is rapid. To quote *The Lancet*, “The dizziness and stupor, the trembling of the limbs and hands, the disturbance of the nerve centres, and of the circulation, palpitation on a slight effort, and the feeble pulse may be the indications of either carbon monoxide or nicotine poisoning.”

Now, a growing lad may be looked upon as a bag of formative protoplasm. Neither nicotine, nor carbon monoxide, nor yet more the two together can be in any way beneficial to his development. Even with the well-fed the influence of these toxic drugs is deleterious, and with the ill, or under-fed, it easily may be disastrous. I know, of course, that callous smokers will say: “Look at me, I started smoking

when I was a lad, and I'm big and strong enough," etc. Apart from the fact that exceptions do not invalidate rules, it commonly will be found that the derider of the dangers of smoking, to the growing, has been reared under conditions which furnished him with a relative excess of provender. To treat the contention that tobacco smoke is harmful to the growing fairly, we must take lads who get a bare sufficiency, or less than a sufficiency of food to secure their fullest possible physical development. The results of careful observations will not be comforting to the smoking optimist. I know, of course, that other unfavourable circumstances too often affect injuriously our growing lads, but these apply equally to the non-smokers. Also I know that smoking sometimes can make one, for a time, less conscious of the pangs of hunger, so that the desire for a smoke may be the perverted craving of a starved system. A more powerful incentive to juvenile smoking is, I am sure, to be found in the influence of example. Lads, with a by no means illaudible ambition, desire to be thought men too soon. In the streets, in railway carriages, and constantly in places of public resort, they see their elders smoking. To smoke becomes, to their invirile imaginations, the outward and visible sign of an inward and invisible manhood. I suppose it is useless to expect grown smokers to exercise restraint in the times and places wherein they choose to smoke—even for the sake of not tempting our juveniles? On the whole, the steady, and, I feel sure, largely unconscious growth of selfishness which may, and only too frequently does accompany the habit of smoking is, to me, one of the most deplorable results of the practice. It is agreeable to the smoker to puff away at his pipe, cigar, or cigarette as he walks the pavement (which, by the

way, belongs to the non-smokers as well as to himself), and soon his demoralisation becomes such that he ceases even to consider how discomforting his en-reeking of the vagrant air with tobacco smoke may be to others, or how easily his example may tempt a precocious boy to begin what, for him at any rate, will be a debilitating practice.

The influence of tobacco smoke upon the blood being to deoxygenate it, and so to keep it of a pink in place of a red colour, smoking tends to the production of pallor. If inhalation be not practised, this effect of smoking is least important when the smoking take place *in the open air*. It will be noticed that in people living in an atmosphere charged with tobacco smoke, though themselves not necessarily smokers, such as smoke-room waiters, billiard markers, etc., a definitive pallor frequently is observable, its special characteristic being a grey tint, which seems to be located in the deeper layers of the skin. I know well that many of the above suffer from other adverse hygienic conditions (the principal ones being confinement virtually to an indoor life, and late hours, etc.), as well as from the breathing of an atmosphere laden with tobacco smoke. If you take non-smokers, working equally long hours, and under equivalent conditions of confinement, but in an atmosphere free from tobacco smoke, and compare the paleness of their skins with the pallor of those who have to respire a smoke-laden air, I think you will agree that the difference is not altogether fanciful.

If it be objected, as by some I believe it is, that where tobacco smoke is not consciously inhaled, it cannot reach the blood in the lungs (a proposition with which I do not agree unconditionally); it certainly cannot be denied that the mouth, pharynx and

posterior nasal chambers, offer a relatively large area from which absorption of its constituents may take place. Absorption must take place somewhere, or the use of tobacco must be farcical in its folly.

The immediate and evanescent effects of smoking being agreeable, you cannot be surprised that lads try to procure repetitions and prolongations of these effects intemperately, and without a thought of the injury they may be doing to themselves. You cannot, I say, be surprised at lads over-indulging, when you find grown men (one of whose most God-like attributes is, or ought to be, their reasoning faculty) becoming subdued by the feeling of sensuous exhilaration and physical "comfort"; as average men do become slaves to other sensual indulgences.

On these grounds then:—retardation of protoplasmic activity and defective oxygenation of the blood from absorption of the products of the imperfect combustion of tobacco we call "smoking"—particularly of carbon monoxide; and debilitation of the nervous system; tobacco smoking, in any shape or form, ought not to be included among the foolish indulgences of the growing, or in any way countenanced or encouraged.

APPENDIX C.

MILK AND THE FEEDING OF INFANTS.

IN the normal method of feeding the milk of a mammalian mother is passed from the teat of the parent into the mouth of the offspring virtually without contact with the air. If we propose to use the milk of one mammalian mother, say a cow, for the feeding of the child of another, a woman, whatever method approximates most closely to the one described is the course to follow. For a variety of reasons the human baby cannot be set to suck the cow's teat, but every possible care can be taken to prevent air from coming into contact with the cow's milk on its way from her udder to the mouth of the baby. This is one aim in the purveying of milk for infants which never must be lost sight of. Another and intrinsically more important one is to prevent the milk from becoming contaminated with any putrefactive or pathogenic organisms, *i.e.*, from dirt and disease, during its passage from the teat of the cow to the mouth of the child. To secure this aim, the most scrupulous cleanliness must be practised in the cowshed, at the dairy, and also at every stage in the delivery. The hands of the milker, for example, if the cow be milked by hand (cows can be, and are, milked by electric motor agencies) must be washed

thoroughly immediately before the milking, and the udder and teats of the cow also. Prior to this washing, the hind quarters of the animal should be groomed, the milker should put on a clean cover-all, and the milk itself should be received into a sterilized vessel. Then the milk should be centrifugalized or strained through a layer of sterilized cotton-wool, be cooled, as quickly as possible, to a low temperature, say 40 degrees Fahrenheit, be placed in sterilized vessels of varying sizes, stoppered securely, and *kept at a temperature below 45 degrees Fahrenheit* until distributed to the actual consumer; who again will be wise to keep his bottle or bottles of milk at a corresponding low temperature until he actually use it. If the purchaser have no refrigerator, he always can place the bottle in a vessel of cold water. The rationale of keeping milk at low temperature is the circumstance that below 40 degrees Fahrenheit bacterial activity is reduced to a minimum, in fact, virtually is inhibited. Therefore, if putrefactive organisms have, by mischance, obtained access to the milk, their malificent activity is prevented. Scrupulous cleanliness should reduce such mischance to a minimum. Careful, repeated, systematic inspection of all cows used as sources of milk for human beings should lead to the disuse of all unhealthy animals, and so reduce the danger of disease being conveyed through the milk also to a minimum. These precautions, in my judgment, will prove more beneficial than sterilizing the milk itself. Sterilization, besides lessening the nutritive value of milk, places a premium upon carelessness and uncleanness at the source of supply. It should be possible, artificially, to "humanize" milk at the source of supply more efficaciously than at a depôt. Sterilized water, sugar, etc., could be added to the fresh clean milk, or

pasteurized milk, in suitable proportions, and this mixture be bottled off into sterilized bottles, and these again be kept at the low temperature suggested. It is to be remembered that the need for artificially "humanized" cow's milk for infants implies a de-humanization of the mothers. That, however, is but a sage reflection, and so I go on to give the following Instructions upon the Feeding and Care of Infants:—

- 1.—The *best* food for a baby is a *healthy mother's milk*.
- 2.—Until it is two months old, a baby should be suckled *every two hours during the day, and once every four hours during the night*, and at gradually lengthening periods after the age of two months has been reached.
- 3.—If possible, no other food than its mother's milk should be given until the child is seven months old. *Do not, on any account, give a child baked flour, arrowroot, cornflour biscuits, or any starchy "infants'" food, before it is seven months old*; the child before that age has no power properly to digest such foods, and diarrhœa and other troubles are pretty sure to result.
- 4.—The mother who is suckling a child requires good, plain, nourishing food, but does not, as a rule, require ale or stout, etc., and should avoid spirits.
- 5.—When the child has reached the age of seven months, feed as recommended in paragraph (e).

FEEDING OF INFANTS BY HAND.

(a) During the first month. *Mix one part of fresh pure cow's milk* with two parts of boiled water*, warm the

* If you have any reason to feel unsure about the character of the milk, scald it for some minutes before using. Scalding represents the domestic substitute for "pasteurization," and suffices to kill off putrefactive organisms without altering the flavour of the milk perceptibly as does boiling.

mixture and sweeten by adding sugar in the proportions of one teaspoonful to every pint. If you store any, keep the mixture in a clean stoppered vessel and in a clean cool place. Give the baby three tablespoonfuls of this mixture *every two hours during the day, and every four hours during the night*. (The mixture should always be given at a warmth equal to or slightly above that of the hand).

(b) During the second month. *Mix three parts of fresh pure cow's milk with four parts of boiled water*, add as before one teaspoonful of sugar to each pint of the mixture. Give up to five tablespoonfuls *every two to two-and-a-half hours*.

(c) During the third month. *Mix fresh pure cow's milk and boiled water in equal quantities*, add sugar as before. Give up to eight tablespoonfuls *every three hours*.

(d) From the third to the seventh month. *Increase gradually the proportion of milk to the proportion of boiled water until you add twice as much milk as water to the mixture*. Continue to give eight to ten tablespoonfuls (ten tablespoonfuls equal quarter-pint) at each meal.

No other food of any kind should be given except by the order of a doctor. Until after a child is seven months old it has no power properly to digest farinaceous food—(bread, flour, cornflour, arrowroot, biscuits, etc.). After a child is six weeks old, a little fresh cream can be added to each meal, starting with one teaspoonful, and gradually increasing the quantity with the age of the child. Sometimes a little barley water, or lime water, in place of plain water may advantageously be given with the milk.

(e) When the child is seven months old it may have one or *two meals of pure milk*, to which some cooked "infants'" food * has been added, daily. The other

* In the selection of this, follow the counsel of your doctor.

meals should be of choice milk only, and *up to twelve months old the child should be given five meals in the twenty-four hours.* The amount of "food" used should be increased as the child grows older. After twelve months the yolk of a lightly boiled egg, or a little milk pudding, or a little bread and gravy, or butter, may be given with or in place of the milk as time goes on. At and after eighteen months a little very finely scraped meat, or a little mashed potato with gravy, etc.

The quantities of food given above are those generally suitable, but the digestive capacities of children vary, and signs of indigestion should not be overlooked because only a moderate amount of food is being taken. *It is unwise for a mother to undertake the medical treatment of her own child.* She should *never give it sleeping or quieting medicine without medical advice.* A young child should not sleep in the same bed with grown-up people. If possible, give it a cot to itself. *The best feeding bottle is the one with two detachable ends, or the old-fashioned boat-shaped one with a wide mouth,* to which only an indiarubber teat is fitted. The bottle and teat should be scalded and thoroughly cleansed (turn the teat inside out) after use, and rinsed out with warm water again before use; (if possible have two feeding bottles and leave one in soak while using the other). *Be most careful thoroughly to cleanse the teat.* The child wants to be clad warmly, but loosely, in flannel or woollen garments. Let it have plenty of fresh air. *Keep the air of the sleeping-room as pure and sweet as possible,* by opening the window widely during the day and leaving it a little way open at night. Scald or boil *all milk* as well as the water before you give these to the child, *if you have any reason to doubt their purity, especially in hot weather,* and in that case, add a little

salt to the boiled mixture. Boiling kills any disease-producing organisms the fluids may contain, and also destroys an anti-scorbutic element, found in normal milk; hence the wisdom of adding a little salt to the boiled variety.

N.B.—*Take every care to prevent milk from becoming contaminated with vitiated air, dirt, or disease germs, after it has reached, and whilst it is within your own dwelling.*



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